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ABSTRACT

Intended to help educators create defensible, differentiated programs for the gifted, the paper analyzes the rationale for such programs and discusses program planning aspects. The following topics are addressed: the need for conceptualization of different programs for the gifted; suggested program goals; program prototypes; curricula for gifted programs; learning strategy instruction; theoretical models for developing curriculum and teaching strategies; integration of the models; program design models; enrichment and acceleration; topics for curriculum augmentation; career education; goals for language arts and communication skills, social studies, mathematics, and science; desirable program attributes; teacher role; significant teacher behaviors; motivation and guidance; administrative arrangements; administrative problems and suggested solutions; and research data on the gifted. (CL)

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SUGGESTIONS FOR PLANNING AND PROVIDING

PROGRAMS FOR THE GIFTED/TALENTED/CREATIVE

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A HANDBOOK COMPILED BY THE NEW YORK STATE EDUCATION DEPARTMENT

Acknowledgments

The materials in this handbook have been written and compiled by Grace Lacy, Office of Urban School Services, New York State Education Department, 2 World Trade Center, New York, New York. The contents include both original material written specifically for workshops conducted by the Department and draws heavily upon other publications produced in recent years by various federally-funded projects. Appreciation is expressed to the original authors for all materials that have been reproduced or adapted for use at the workshops. Readers are encouraged to refer to the original publications wherever possible for full treatment of the subject matter. A selective bibliography is included to provide basic references to the topics discussed in the handbook.

This handbook may be used in conjunction with the two Department publications on identification. The first, Guidelines for the Identification of the Gifted and Talented, was distributed to all schools in the summer of 1978. The second, Suggested Procedures for the Identification of the Gifted and Talented, was also compiled by Grace Lacy for use at workshops during the 1978-79 school year.

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"Equal education is the foundation of the right to be a human being...... This does not mean that any gifted child or any child having a greater capability to learn may or shall be deprived of his or her opportunity of learning more. It does mean that every child shall have the equal opportunity to learn to the best of his or her ability. That opportunity must be made available to all on equal terms."

Alfred Gitelson, Judge
County of Los Angeles
Superior Court Case 822854

SOME SUGGESTIONS FOR PLANNING AND PROVIDING PROGRAMS FOR THE GIFTED/TALENTED/CREATIVE

This publication attempts to present background information on the development of programs for the gifted and talented. The data supplied should be helpful to educators in explaining and initiating these programs for it provides an overview of the features and procedures necessary to their implementation. The suggestions proposed here need to be supplemented by additional readings in the literature and research on the gifted.

The focus of the paper is directed to the program needs and how best these needs can be met. To be successful, programs should be planned and constructed at the local level to fulfill the individual requirements and interests of the community. Recommendations for many program alternatives are given in addition to useful information about theoretical learning models and program models helpful for planning and implementing local efforts.

In developing programs for the gifted, it is essential to assess the factors which are "existent" with those which would be "ideal" for the gifted/talented. A program for the gifted not only should be compatible with other on-going school programs, but also should exert an influence over the total organization which it serves. The impact and survival of the program will depend upon its flexibility and adaptability to new and changing information as well as on its stability in adhering to the purpose for which it was originally planned.

To assist educators to create defensible, differentiated programs for the gifted, this paper attempts to:

- Provide a rationale for differentiated programs for the gifted/talented.
- Suggest key points for consideration in planning.
- Provide principles for program construction.
- Discuss program elements.
- Suggest strategies and approaches uniquely appropriate for the gifted.
- Suggest teacher competencies needed for creating and implementing programs.
- Provide insight into various useful models on which to base program construction and teaching/learning strategies.
- Provide a selective, useful bibliography and list of sources for curriculum planners.

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A RATIONALE: FORCES AT WORK WHICH ARE MAKING SPECIAL PROGRAMS FOR THE GIFTED NECESSARY

The Gifted/Talented Constitute an Underserved Population

As long as there are no categorical funds or state mandates for the education of the gifted, it is sometimes incumbent upon those desiring to initiate programs to persuade the reluctant and uninformed members of the community of the need for such programs. There is often deep-seated resistance to these proposals. Therefore, it is advisable for program advocates to be well-armed with convincing evidence in their support.

Many Americans maintain a rather ambivalent attitude toward the gifted/talented. They recognize the significant need for the creators, the problem solvers, the leaders the inventors, the pathfinders and the visionaries in the arts. Yet, at the same time, they fear that special education for and attention to the gifted may create an elite. Their thinking on this issue is further confused by the mistaken notion that the gifted require no special help, that they will succeed without it.

As a result, gifted and creative children at all levels of society are being denied the stimulation everyone deserves in a democracy. These children will not triumph over mediocre educational programs and achieve at superior levels without special assistance. There seems to be the belief that the average or below average children can approximate the common man while the gifted and creative, since they are often functioning above the capability of the common man, are allowed to drift. This misfortune has resulted in an incalculable loss to society of leadership potential. The public must be educated to realize that education can be appropriate only when it meets the needs of every individual.

Myths about the gifted/talented/creative needing no special help must be dispelled. The public must be educated to the facts so that programs for the gifted/talented will gain sufficient support to be properly initiated and implemented. The community should be assisted to understand that:

.The gifted and talented represent a group of students whose learning and thinking dimensions demand educational experiences outside the educational mainstream.

.Gifted children can learn more and faster than others and therefore are often unchallenged and bored with the regular curriculum. Unless their special needs are met their talents may be wasted.

.Gifted children remain similarly advanced throughout life and tend to become leaders.

.The regular school curriculum only barely approximately meets the needs, the greater learning capacity, or the anticipated social roles of the gifted. A different program should be devised for gifted students which is unnecessary for, and impossible of accomplishment by students of lesser ability.

.By providing special programs for the gifted, more gifted persons will be discovered and their gifts and talents will be nourished, not only to benefit themselves, but society and the nation as well.

These and similar ideas, along with related literature, should be presented to the district Committee on the Gifted and the Board of Education. After a study of the literature, the Committee on the Gifted should draft a philosophy (of Education of the Gifted) acceptable to the community. Common to philosophy statements is the ideal of educating a person who will live a life that provides for maximum self-realization and social contribution. Other goals include a sense of social responsibility, creativeness, versatility and breadth of interest, depth of information and understanding, effective thinking and personal happiness. District policy and program goals should then be based on the local philosophy and definition of giftedness.

The Rise of Consumerism in Education

Powerful social forces are also at work which are giving rise to demands for an appropriate education for every child. The public is rejecting the "factory model school" where all children, regardless of their needs and abilities, are processed with the same curriculum, and they are going to the courts to get when they want. Public Law 94-142 is a federal law that mandates that every handicapped child must be provided with an "appropriate learning environment" and an Individual Education Plan (IEP). Twenty states now group the gifted along with the handicapped under special education and they too must have IEPs.

Dr. Dorothy Sisk of the USOE predicts that within five years all children will require such an IEP. As a result, all teachers will need improved skills in diagnosis and prescription and greatly increased abilities in the individualizing of instruction. Thus, the trained teacher of the gifted can, in effect, spearhead educational reform by tailoring programs to the specific needs and characteristics of the gifted and serve to inspire other educators to improve individualization of instruction. Consequently, when critics point out that what is being suggested for the gifted is good for all children, they are right in a limited sense. Of course, programs for the gifted will entail differences (1) in entry levels, (2) in time spans for achievement of goals, (3) in content, (4) in teaching/learning strategies (5) and will involve a wider variety and amount of experiences as well as some uniquely different kinds of experiences.

The Need for Creative Problem Solving Ability in a Troubled World

Other factors which serve to turn the spotlight on the need for education of the gifted are the enormous and growing number of semmingly unsolvable social problems which threaten not only our society, but civilization itself. America appears to be coming apart at the seams as energy crises grow, unemployment problems multiply, crime rates rise, inflation escalates and costs skyrocket. On a global scale the failure of the Green Revolution poses prospects of mass starvation unless man suceeds in destroying the planet with hydrogen or neutron bombs first.

In this race against catastrophe and annihilation man must look to his intellect, ingenuity and creativity to survive. Thus there is now emphasis in education on locating and developing creative problem solving abilities. Educators are urged to identify and nurture creativity in the young toward this end for problems of this magnitude will yield only to first rate minds.

Meeting the Challenge

Will educators be able to meet these challenges successfully? Success depends on educators' understanding of the nature of this task and in their ability to develop defensible differentiated programs for the gifted/talented based on sound psychological and educational foundations. Success will further depend on how well educators employ the mass of new knowledge about education of the gifted which is now available to them.

Much new theory and research data have accumulated since the last period of emphasis on the gifted in the post-Sputnik days when Americans were threatened by Russian technology. As yet, this knowledge has rarely been translated into classroom practice because many teacher training institutions have not fully incorporated these data into their programs. Consequently, in addition to careful research and planning, in-service staff development in these newer theories is also crucial to the success of programs.

THE NEED FOR CONCEPTUALIZATION OF DIFFERENTIATED PROGRAMS FOR THE GIFTED

Until very recently, most colleges and universities have not offered courses in education of the gifted within the past decade. For this and other reasons many educators have failed to conceptualize exactly what a differentiated program for the gifted is. As a result, many schools make provisions for the gifted - trips, performances, artists in residence and other enriching activities in the belief that these constitute a true program for the gifted.

Unfortunately, while some of the provisions are educationally excellent, much of this so-called enrichment consists of a series of experiences unrelated to the curriculum, or a hodge podge of games, kits, and artsy-craftsy activities of dubious educational value. Other schools believe that they are enriching by providing "more of the same" for the gifted simply because they can learn faster and do more. Such provisions are not likely to nurture the special talents of the gifted nor help them reach their potential.

Efforts based merely on occasional provisions of "more of the same" contribute to cyclical faddism in education of the gifted and are unlikely to gain lasting public support. Just as a building constructed without architectural plans will result in wasted space and duplicated facilities, so education programs created without careful planning and good educational models result in wasted time and indefensible practices. Such "Jerry-built" programs are unlikely to produce good results. Moreover, they provide a good deal of ammunition for persons who question the value of special programs for the gifted.

The aim should be to create a program with scope, sequence and developmental continuity. Good provisions can then be selected which will meet some of the program objectives and be related to curriculum. Of course, the ultimate goal for any program plan is to make the activities for the gifted an integral part of the total school program. They should not be separate from, or in competition with general education. If schools decide on such long-range goals in advance, the various provisions can be made with the total plan in mind, thus insuring the desired scope, sequence, and developmental continuity.

The plan should be based on a sound philosophy and theory and plans and programs must be constantly revised on the basis of feedback from students, teachers and parents. Even small funding for programs for the gifted has been a long time in coming. If the movement for education of the gifted is to last and grow, any expenditure for such efforts must be carefully planned for the greatest educational return.

Programs must be defensible to be accepted and sustained by the community. Careful consideration of the points suggested below can assist educators to plan accountable programs as well as educationally and psychologically sound ones. This push for education of the gifted can, in the long run, benefit all children by spearheading new and useful curricula and teaching learning strategies. Useful innovations which begin in special education eventually affect and improve the quality of mainstream programs but planners must be thoroughly aquainted with the concepts basic to education of the gifted before creating programs for them.

SOME SUGGESTED PROGRAM GOALS FOR GIFTED STUDENTS

While the goals listed below are worthy ones for any student they have special significance for the gifted.

I. *Development of leadership qualities which involve:*

1. *Self-discipline.* Students should:
   - -Better understand and recognize responsibilities.
   - -Set reasonable goals in learning.
   - -Organize and plan learning activities.
   - -Make efficient use of time.

2. *Self-awareness.* Students should:
   - -Know themselves better and appreciate gifted qualities.
   - -Develop self-confidence.

3. *Social Awareness.* Students should:
   - -Understand others who are not gifted.
   - -Develop confidence in the abilities of others.
   - -Learn to tolerate differing points of view.

4. *Communications:* Students should:
   - -Become familiar with various means of communication.
   - -Develop an awareness of the complexities involved in communicating adequately.
   - -Develop critical thinking ability.

5. *Independence:* Students should:
   - -Learn to better evaluate their strong and weak learning areas.
   - -Learn to better direct their own learning.

II. *Development of Thinking Skills/Creativity.* Students should have skills in:

1. *Flexible thinking*
   - -Be able to see different approaches
   - -Gain ability to shift categories
   - -Have a variety of kinds of ideas

2. *Original Thinking*

3. *Elaborate Thinking*
   - -To add on to, magnify, combine
   - -Expand an idea, elaborate

4. *Problem Solving/Decision Making*

5. *Risk Taking*
   - -Have the courage to risk failure or criticism
   - -Define their own ideas

6. *Logic and Reasoning*

III. *Development of an Aesthetic Sense*

IV. *Development of Independent Study Skills*

1. *Enrichment of interest area*
2. *Extension of classroom activities*
3. *Proficiency of research skills.* Students should learn:
   - -Outlining skills in organizing materials
   - -Library skills: How and where to find information
   - -Research skills: Be able to find and organize material according to an accepted procedure.

V. *Establish a Positive Attitude Toward Learning*

VI. *Improvement of a Very Weak Academic Area*
(This is an option and should not be considered a priority goal).[1]

What Is Different About Programs for the Gifted?

Educators must be prepared to explain to the public not only why programs for the gifted are necessary, but how they differ from the regular school program. They should be able to answer such questions as:

.Isn't what you are doing for the gifted good for all children?
.If you have individualized instruction, why do you need programs for the gifted?

What passes for individualization in many schools is individual pacing through exactly the same materials, worksheets, and subject matter. This does not constitute a gifted program.

Although programs for the gifted are as distinct as the many different districts that conduct them, basic program elements involve:

.A teacher who has special training in working with the gifted.
.A target population which has been identified by qualified professionals.
.A curriculum based on the needs and interests of the identified target population.
.Activities and approaches which are distinct and different to the extent that they can be described. (Distinct and different refers to the program for gifted children as compared to the common educational program of the school.) Emphasis should be on process skills, learning to think, judge, and evaluate, but should not emphasize process unrelated to the content and methodology of organized fields of knowledge. Pupils must think or be creative about something. Processes are important but they are the paths to learning, not the end goals.

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[1] Kaplan, Sandra, A Handbook for Program Planning, L/T/I Publication. Ventura, California.

.Integration of learning with highly realistic life experiences and encouragement of the active involvement of students.
.Recognition that all students must master certain basic skills.

Programs for gifted children may take several forms. Basically, these are:

.Enrichment and acceleration of content
.Independent study
.Curricular modifications
.Instructional methods designed to develop reasoning processes such as critical thinking, evaluative thinking or creativity.

Other activities desired but either not extensively or effectively in use include:

.Early admission to a school or grade level, advanced placement courses.
.Grouping across grade lines. (e.g. If each of several classes has a few gifted children, these can be taken out for part of the time for enrichment in a cross-graded class or can be placed in such a class permanently.)
.Assignment of special counseling or guidance to pupils of high ability.
.Use of programmed materials; contracts, learning packages, Centers.
.Grouping for special purposes or special classes.
.Organization of a library or media center for use in independent or other study.
.Selection of special programs such as the Great Books Program.
.Inquiry training or national curriculum projects.

The procedures listed previously are or can be merely administrative changes. The teaching process, the mental action that occurs, and the ideas and attitudes involved are more important than the actual arrangement designed to benefit students with high capability.

The aims and goals of the program are of primary importance. Programs should be designed not only for learning but also for thinking. Simple recall and memory work should be supplemented by other types of mental operations such as those described by Guilford, Torrance, and others, which involve critical, constructive, liberal, logical, analytical thinking as processes to be learned. The staff must clearly understand the importance of developing these thought processes in the learning situation if changes made for the gifted program are to be more than simple changes in materials and administration.

The program should emphasize how to think instead of what to think, with evaluation methods reflecting the same philosophy. If tests require memory and recall rather than the above types of thinking processes, students will soon learn where the pay dirt is and simply regurgitate information covered.

The curriculum for the gifted must significantly differ from that of the regular curriculum in one or more of the following ways. It will have:

.A wider range of subject matter.
.More intensive studies of those subjects common to the gifted and regular curriculum.

- .More work with abstract knowledge and with higher level intellectual skills such as analysis, synthesis and evaluation.
- .Attention to various learning modes such as problem solving, independent study, first hand experience, lecture and range of talents other than intellectual. These might include such other characteristics within the individual not necessarily directed toward academic achievement such as.
  - .Leadership potential
  - .Sensitivity to the needs of others
  - .Interest in creative activities
  - .High goal orientation
  - .Kinesthetic ability
  - .Foresight
  - .Unusual vocabulary development
  - .Abstract thinking
  - .Insight into problems
  - .Reasoning
  - .Problem solving
  - .Humor and wit
  - .Range of interest and curiosity
  - .Divergent thinking abilities[2]

The usual school arrangements must be altered if a rational program is to be devised so that the gifted can perform more adequately than in the usual setting. Acceleration must be accompanied by opportunities for learning beyond the level to which the child is administratively accelerated. Provisions must be made for special groupings when necessary. New arrangements and new programs must be utilized, including freedom to pursue interests even though they may not fit in the original curriculum.

Opportunity for open blocks of time, opportunities for consultation, not only in the classroom but also with adults and resources outside the classroom, opportunities to by-pass those portions of the curriculum already absorbed in the past by the individual are necessary. These type of arrangements must go in all types of groupings whether in the regular classroom or in highly special interest areas. Efforts to provide enrichment through additional content (more of the same) at an originally inappropriate grade level serve only to compound the frustrations of the gifted.

Opportunities for the gifted to employ their academic and creative abilities should be provided. This requires constant examination of the true relevance of that to which the child is exposed. To provide such an augmented curriculum the teacher must have a wide knowledge of alternatives to standard prescribed methods and materials.

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[2] Pennsylvania Department of Education Position Statement, 1977.

The Gifted Child's Characteristics, Interests and Needs Form the Basis for Curriculum and Teaching/Learning Approaches

Gowan and Bruch (1971) point out that the gifted differ from other youngsters in their needs for greater challenge in the intellectual excitement of creative explorations and productions, and in respect to their early concerns with questions about values and morals. These characteristics of gifted youngsters are exceptionally responsive to appropriate curricular and guidance programs and at the same time become potential problem areas when they are neglected or mishandled. Typically gifted children have:

-More complex self-actualization needs because they begin to construct a value system earlier in life and make a more intense search for meaningfulness.

-Greater dissatisfaction with "standard" acceptable levels of performance (are more self-critical).

-Social and emotional development which continue over a long span of time and to a higher level than that of average persons.

-Difficulty in finding an adult model figure of high enough level of attainment.

-Confusion stemming from a dual norm group (intellectual peer group and chronological age group).

-Vocational adjustment problems including
 .Conflict with cultural stereotypes.
 .Upward social mobilization problems.
 .Selection of vocational choice in line with abilities
 .Frustration of gifted women in careers.

-A need to learn to maintain feelings of worth at times of little or no recognition.

-A need for a creative atmosphere--the freedom for constructive non-conformity.

-A need to try out ideas, values and social attitudes on a peer group.

-Keen perception of the attitudes of those around them.

-A highly developed sense of responsibility for participation in the advancement of society.

Listed below are techniques and approaches which are appropriate for typical characteristics of the gifted:

Characteristic	Approach
.Creative and curious	.Providing a rich and varied environment which the child is encouraged to explore to make discoveries on his own. Encouraged to be creative.
.Talkative	.Children are encouraged to talk with each other and teacher.
.Independent	.Independence respected while teacher gives guidance when needed. Provision for much independent study and work.
.Work oriented	.Child is provided with sufficient materials and tasks to keep him interested and busy.
.Fund of information	.Child is permitted to proceed at his own pace. Is provided with opportunity to share information with others.
.Likes challenge	.A range of task difficulty is provided so that the child is challenged but not overwhelmed.
.Self critical and impatient	.Patient teacher who helps child to evaluate self critically but also to realize his own worth.
.Intuitive	.Spontaniety encouraged
.Self starter	.Intrinsic motivation honored
.Need structure	.Individual interests are encouraged but ground rules for environment laid down-liberty within limits.
.Perseverance and concentration	.Opportunity to complete cyles of activity nonintervention by teacher
.High energy	.Mastery of movement; precision of movement
.Realistic and questioning, reality oriented	.Reality oriented education
.Love of language	.Extensive program of specific exercises for language development, teaching of vocabulary, communication skills.
.Power of abstract thought and reason	.Exercise of higher powers of the mind.

Ten Cardinal Principles for Programming for the Gifted

1. *Particularization of Objectives*

   Philosophies for gifted education should take account of the exceptional abilities of the program participants and state the anticipated roles of these youth as adults as frontiersmen of knowledge in a growing complex world.

2. *Staff Training and Responsiblity*

   Wise selection of qualified teachers and provision for continuous inservice training of such personnel is mandatory.

3. *Community Interpretation*

   The community should be informed and have opportunities for input in reacting to program plans to elicit community support.

4. *Systematic Pupil Identification*

   A knowledgeable use of psychological and other instruments and judicious use of evaluation by personnel closely acquainted with potential candidates is essential.

5. *Distinguishable Curricular Experiences*

   Curriculum must be distinctly differentiated, involve the high powers of the mind, and be suited to the needs and characteristics of the gifted.

6. *Flexible Pupil Deployment*

   Marked departures from traditional practice in administrative arrangements are necessary parallels to sound, forward looking curricular adaptations. Gifted children need the simulation of being with their gifted peers part of the time. They also need to be with other children some of the time to form realistic self-concepts.

7. *Comprehensiveness and Continuity*

   Every phase of the total program for the gifted should apply comprehensively across the pupil populations and subject areas in a continuously articulated K-12 program.

8. *Progressive Program Development*

   Programs should be continuously upgraded on the basis of teacher, pupil, and parent feedback.

9. *Financial Allocation*

   Education for the gifted, while in no way comparable to the costs of education for the handicapped, is after all special education and should be funded as such on a regular basis.

10. *Radiation of Excellence*

    Good programs for the gifted tend to affect entire schools in curriculum content, teaching/learning strategies and the striving for excellence.

WHAT ARE THE PROGRAM POSSIBILITIES? PROGRAM PROTOTYPES

Program prototypes are organizational patterns which become the setting for the learning environment that accommodates the needs of the gifted/talented. The use of any prototype is based on how it fits into the needs of the school and matches the objectives developed for the program and the needs of the students. No one prototype will do everything. Program form should be molded to the needs of the students and to best fit in with the total educational program.

The basis for developing any program prototype is found in (1) using some form of enrichment, (2) grouping, (3) acceleration, and (4) guidance. The variations in prototypes are a result of how the various elements are put together and made available to students.

Each type of grouping presents its own advantages and problems which should be considered before adoption of a plan. Various suggested groupings include:

- Cluster grouping within the regular classroom
- Special regular classes
- Part-time groups which meet before or after school or on Saturday
- Correspondence courses
- Upgraded or multiage classroom
- Continuous progress curriculum

Program prototypes fall into two main categories:

Intraclassroom Prototypes

- Independent study
- Tutoring
- Correspondence
- Cluster groupings
- Special regular classes
- Upgraded classroom
- Supplemental activities

Extraclassroom Prototypes include:

- Special interest groups before, during, or after school
- Seminars
- Community mentors and resources
- Advanced placement for part of the school day
- Counseling
- Tutoring
- Correspondence
- Teaming
- Resource centers
- Independent study
- Off campus enrollment[3]

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[3] ProvidingPrograms for the Gifted and Talented, A Handbook, Sandra N. Kaplan Ventura County Schools, Ventura California, 1977.

The Kaplan Handbook listed above discusses the benefits and problems related to each of these prototypes and suggests exemplary practices in regard to the groupings.

The type of program prototype chosen will depend on the staff and facilities available as well as the policy of the district. Although this paper does not purport to advocate any one type of prototype the comments below may prove helpful in making a choice.

Magnet Schools A magnet school has many advantages in that the type of equipment and many materials necessary for gifted/talented education can be housed in one area and a staff of experts can serve to complement each other in the education of the gifted. An added advantage is that magnet schools can help to promote integration by bringing nonminority students into areas of the city where they would not ordinarily go. The chief problems related to the magnet school is that of transportation of students to the school site.

Minischool Within a School: This prototype presents somewhat the same advantages as the magnet school but permits students to remain in original locations.

Special Classes: This practice has been most successful and is easy to implement. If there are not enough gifted students on a given class cross graded classes may be used. Special classes may be offered on a regular or part-time basis, as in a pull-out program.

Semi-separation programs: Gifted children in several classes may be involved in a pull-out program that takes them out of the regular class for a certain part of each day or week to attend a resource room where a special teacher provides for enrichment, acceleration or independent study. The advantage of such programs is that they are also easy to implement, but work carried on in them should be coordinated with the regular classroom work.

Resource Room or Center: Children attend the center on a regular basis to do independent study or receive instruction. The Center must be well supplied with suitable materials and the work done there well coordinated with a developmental curriculum for the gifted.

Off campus enrollment: Elementary school children may attend advanced study classes designed for them, or accelerated classes at nearby high schools or colleges. High school students may take some advanced placement classes at nearby colleges or do advanced correspondence work.

Use of Community Resources: Museums, libraries, professionals in various fields who serve as mentors, places of business, industry, and cultural agencies of all types can provide sources of instruction for the gifted. The talented may make use of private teachers, theaters, artists of all types, either in or out of the school. The problem here is to make sure that the persons and agencies involved are properly qualified and that the instruction offered by them is coordinated with the school planned curriculum.

Cluster grouping within the regular classroom: This is one of the most difficult types of gifted programs to implement and requires a great deal of organizational skill on the part of the teacher. In this case, the gifted receive regular instruction with the whole group, but also some advanced and differentiated types of instruction. Although an expert teacher can manage such a situation, this is the least desirable arrangement.

The Itinerant Teacher: This arrangement can be very good, but it also poses many problems in that the teacher often has to carry her materials and supplies from place to place without a really desirable home base. Moreover, much time is lost in travel between schools, and since the time spent in such instruction is often minimal, the program impact may be lost.

After School or Saturday Programs: These prototypes are often a good way to initiate a program for the gifted. However, the aim should be to have the program become a part of the regular school day program as soon as possible, otherwise it is not likely to last.

The Mix and Match Chart (Fig 1) provides further suggestions for program prototypes as does Kaplan Handbook cited on p. 13.

Figure 1

PROGRAMMING POSSIBILITIES

MIX & MATCH[4]

WHO

- Generally gifted/talented
- Academically talented
- Gifted with in:
  - math
  - reading
  - any content area
  - leadership
  - motivation
  - creativity
  - psychomotor (dance, athletics, movement, mechanical)
  - arts (visual, performing)
- Gifted with weakness in any of the above
- Ethnic gifted

HOW TO GROUP

- Multiage-primary or intermediate
- Student pairing
- Student and adult pairing in or out of school
- Homogeneous - all or part of the time
- Integrated/mainstreamed with articulated program all or part of the time
- Independent study project
- Interest based
- Alternative schools
- Early entrance

PROGRAM TYPE

- Counselor
- Mentor/tutor
- Itinerant resource person
- Learning centers
- Minicourses, seminars
- Community-focused
- Resource room
- Parent volunteer
- Community
- Continuous progress
- Library
- Great books
- Field trip/travel
- Acceleration(faster than curriculum)
- Enrichment(broadening the curriculum)
- Differentiated curriculum
- Skills/process base
- Advanced placement

WHERE

- Gym
- Library
- Art or music
- Coatroom
- Cafeteria-student or faculty
- Tent
- Playground
- CD Shelter
- Hallway
- Principal's office
- Home Ec room
- Shop
- Classroom
- Loft
- Part of any above
- Community

WHEN

- Before school
- After school
- Saturdays
- Summer
- Vacations
- During day
  - study hall
  - activity time
  - altered schedule
  - block schedule
  - released time
- Year-round school

While the part time and after school or Saturday activities are excellent ways to get programs for the gifted started the ultimate goals should be to have them become integral and ongoing in the regular school program.

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[4] Chart by Judith J. Wooster, reprinted from the April Instructor Magazine by permission.

THE CURRICULUM FOR GIFTED PROGRAMS: WHAT KINDS?

The curriculum, the content to be learned, gives substance to the program prototype. While the content of programs may vary widely, the curriculum should provide for organizing teaching/learning activities so as to effect specific cognitive and affective growth. The curriculum is not a prescribed route which every child must follow, but rather a framework for learning alternatives. Today the concept of a fixed curriculum is giving way to the idea of a curriculum which suggests a variety of ways to reach learning goals and objectives. The starting point for the curriculum is the child's world and the end result of learning is progress in self-understanding as well as an increase in academic ability.

Current curriculum theory places emphasis on the flexible usage of the curriculum as it relates to the student's needs and interests. However, this does not mean that students will be continuously allowed to follow whatever interests them without guidance into enlarged horizons or without mastering basic skills and concepts. The point is that there are many alternative ways to achieve educational goals.

Some Suggested Curriculum Goals

Curriculum for the gifted should involve the following goals:

- Grounding in, and extensions of the basic skills, both for the purpose of getting higher education and developing the ability to become a producer of knowledge.
- Development of human capacities through affective as well as cognitive growth in order to become a self-actualizing human being and to achieve higher levels of humanity.
- Development of higher powers of the mind, the capacity for abstract thought, critical thinking and reasoning ability, the ability to see interrelationships, to predict, to forecast, to make effective decisions.
- Encouragement of creative intelligence, the development of an open, seeking, aware mind determined to improve the quality of life through creative problem solving.
- Encouragement of social and human concerns and social responsibility and skills for effective interaction with others.
- The development of an awareness of career possibilities and opportunities to develop saleable skills.
- Independent learning skills. Students should be given the skills and encouragement to enable them to become life-long learners to become producers of knowledge in their fields as well as informed, appreciative consumers of knowledge.

- The acquisition of "superior knowledge" not merely an endless proliferation of facts and ideas. Unlike scientific knowledge, "superior knowledge" does not double every ten years. Instead, it is comprised of certain underlying themes which could be called rules to live by. Such knowledge contains the essential truths of the human conditions. Such timeless and eternal knowledge is contained in the great classics and the scriptures. Where education can help is in presenting and clarifying this knowledge and encouraging students to act accordingly. It is not that the lessons of the past have been neglected in schools but rather than too often they were conducted as mere scholastic exercises. Youth should internalize this "superior knowledge" not through personal search, inquiry and questioning in order to acquire a worthy philosophy of life. Having acquired it they should then be encouraged to make the world a better place.

Principles of Curriculum for the Gifted/Talented

The curriculum should translate the basic principles of learning into practical activities for learning. The following principles should be components of curricula for the gifted. It should be:

1. *Subject-Related*
   Learning activities should be related to something to which thinking and doing can be related. Example: Compare the human body parts to various machines. Here the thinking skill of comparison is stimulated.

2. *Process-Oriented*
   Thinking skills and not mere acquisition of facts should be emphasized. In likening the parts of the human body to machines the process of comparing is stressed as a skill of thinking.

3. *Doing-Centered (Product-Oriented)*
   The learner should be actively involved in some task. The student could make a model of the various body parts as related to different machines (e.g. knee joint and hinge).

4. *Open-Ended Application*
   Learning activities should allow for various personalized response. There is no stipulation as to how the comparing is to be done.

5. *Student-Selected*
   Learning activities should provide options for individual differences in need, preferences, and capability. The student can complete an assigned task in any way he/she chooses.

Elements of Curriculum: Content, Process, Product

Curriculum should contain the proper balance of content and process. The content is not an end in itself but becomes the vehicle for the student to acquire and develop specific skills. The understanding and absorption of the content becomes the prime objective for the learning experience.

Process refers to the methods of thinking which are emphasized. Thinking skills can be classified according to the teaching learning strategies of (1) problem solving, (2) creativity, (3) inquiry, and (4) higher levels of cognitive operations.

Product is what the student produces as a result of the learning experience.

Differentiating the Curriculum for the Gifted/Talented

Curricula for the gifted and talented must be congruent with the characteristics which define them as a distinct population. Differentiation of curriculum for the gifted and talented relies on the elaboration of certain variables, procedures for presenting learning opportunities, nature of the input and expectancies for learning outcomes, the entrance level, the amount of time involved, and the level and depth of experience involved. The basic key to curricula for the gifted is that the experiences should not be "more of the same." The task is not to add more reading, more arithmetic, more science but to help the gifted child find greater meaning in the life around him. This differentiation can be provided within the regular curriculum or in separate curricula and may involve:

.Accelerated or advanced content.
.Higher degree of complexity of content.
.Introduction of content beyond the prescribed curriculum .
.Student-selected content according to interest.
.Working with abstract concepts in a content area.
.Level of resources.
.Types of resources available.
.Appropriation of a longer time for learning.
.Creating or generating something new.
.Recognition that the student can learn abstract concepts more quickly.
.Transfer of learning to areas of greater challenge.
.Formulation of new generalizations.
.Development of higher-level cognitive processes.
.Independent research.

Factors To Be Considered in Constructing Curriculum for the Gifted

The Philosophy Is Basic to the Program.

Each district should develop a philosophy regarding education of the gifted talented/creative related to the needs and interests of the students and community. However, to have an adequate program it is essential that the philosophy contain the following points:

1. The gifted have unique characteristics which require a differentiated curriculum.

2. The gifted, just as other children need and deserve *an education appropriate to their individual needs.*

The Needs and Characteristics of the Gifted/Talented Are Basic to Curricula.

It is important that educators fully understand the needs and characteristics of the gifted, not only for the purpose of identification of such youth, but also for the purpose of developing curricula and programs that will nurture those gifts in desirable ways. While the gifted and talented have a wide ranging variety of characteristics, these traits tend to fall into three general categories:

1. *Cognitive abilities* which include the power of abstract thought, the ability to synthesize, analyze, judge, and use other higher level thought processes.

2. *Creativity:* Among characteristics classified under this rubric are such qualities as originality, fluency, flexibility, imagination, the ability to create new products, and to solve problems in unique ways.

3. *Personality characteristics* which fall into two major types: (a) motivational characteristics such as wide-ranging interests, long attention span, persistence, concern over social problems and (b) leadership characteristics which involve the ability to persuade and dominate others and self-confidence. Personality factors greatly influence how well other abilities are used.

Not all of the gifted have equal amounts of abilities in each of the three areas. Some who have cognitive ability and creativity, may lack the self-discipline to make real contributions. However, consideration of these clusters of characteristics is also basic to curriculum construction in order that the desirable traits be developed and enhanced. Guidance in overcoming negative characteristics is also needed.

HOW SHALL THE PROGRAM BE TAUGHT /LEARNED? TEACHING/LEARNING STRATEGIES

Not only is the content of programs for the gifted/talented different but so also is much of the teaching/learning methodology. Although the primary emphasis in educating the gifted/talented is to allow them to become independent learners, this fact does not lessen the importance of the teacher's role. The teacher of the gifted must be highly skilled in using a wide variety of strategies to promote the development of the gifted. To gain such expertise the teacher should make use of the best of educational and psychological theory as well as the research data on human learning.

Theoretical Models

Much of this knowledge has been incorporated into the more than 80 teaching/learning models now available to teachers. Unfortunately, these models are not widely used in classroom practice because few teachers are familiar with them or know how to use them. Many of these theory-based models have now been developed to the point where they can be implemented in the classroom. By learning how to use them teachers can vastly upgrade their professionalism by increasing the range of teaching strategies they are able to employ. As teachers learn to understand these models, they become better able to interact comfortably and successfully with students. Moreover, knowledge of the models enables the teacher to depart from traditional teaching to meet the differing needs of the gifted and to stimulate them in a differentiated manner.

A learning model presents a structure and scheme for developing or presenting a learning experience. No one model needs to be used to the exclusion of others. The idea is to adapt, modify, and combine those elements of the various models which best enable the teacher to meet the needs of the gifted. Publications which describe and explain the models in detail are listed in the bibliography.

Models for teaching can be divided into four families

1) *Social Interaction Models* such as Social Inquiry (Masailias and Cox) Role Playing, (Shaftel).

2) *Information Processing Models* such as Concept Attainment (Bruner) and Cognitive Growth (Piaget).

3) *Personal Models* such as Awareness Training (Rogers) and Synectics (Gordon).

4) *Behavior Modification Models* such as Programmed Instruction (Skinner) and Simulation (Link).

These, of course, are only a few of the models useful for teaching. The teacher should acquire skill in the use of several models so that he/she can vary the roles and strategies to suit changing classroom needs. Three models especially useful for teaching the gifted are described in detail below; but, it is necessary for the teacher to study the original sources and related literature to gain deeper understanding of the practical use of these devices.

THEORETICAL MODELS USEFUL FOR DEVELOPING CURRICULUM AND TEACHING STRATEGIES FOR GIFTED PROGRAMS

BLOOM'S TAXONOMY OF EDUCATIONAL OBJECTIVES: COGNITIVE DOMAIN

Bloom's taxonomy is a useful tool for organizing teaching methodology. The taxonomy is a system for classifying objectives, principles, and facts in a manner consistent with their natural or logical interrelationships through a hierarchical ordering of elements from simple to complex, and from concrete to abstract. A brief insight into the content of the taxonomy is given below. It presents a hierarchy which recognizes that different skills are required at different levels of learning. The taxonomies are a means of moving students along a continuum of cognitive affective or psychomotor behavior.

Taxonomy Classification: Cognitive Domain

1) *Knowledge*

This lowest classification involves knowledge of specifics, names, dates, facts, phenomena, conventions, devices, symbols, trends, categories, criteria, principles, theories, elements, methods, rules, procedures, treatments, etc.

Some key words used in teaching at this level are: define, state, recall, identify, recognize, distinguish.

2) *Comprehension*

At this level the pupil shows that he understands, grasps meaning, and is able to interpret and extrapolate.

Key words used in teaching may include: translate, transform, represent, change, re-phrase or restate, make, draw, explain, demonstrate, extrapolate, fill in, see relationships, consequences, meanings, estimate, grasp, infer, conclude, predict, determine, interpolate, extrapolate, theories, abstractions, consequences, meanings, corrolaries, effects, probabilities, etc.

3) *Application*

At this level the pupil can apply knowledge, generalize, relate, choose, develop, employ, transfer, restructure, classify, or otherwise demonstrate understanding of knowledge by applying it. He/she can grasp principles, laws, conclusions, effects, methods, theories, abstractions, situations, generalizations, processes, phenomena, and procedures.

4) *Analysis*

Analysis involves being able to take things apart to see the components of which they are made; to see elements, relationships, and organizing principles.

Words used in teaching at this level may involve: distinguish, detect, identify, classify, recognize, categorize, deduce, analyze, contrast, compare, distinguish, deduce.

Analysis may involve seeing elements; making hypotheses, drawing conclusions; assumptions, relationships, interrelations, relevancies, themes, evidence, fallacies, arguments, cause and effect, parts, ideas, patterns, techniques, bias, point of view, structure, and organization.

5) *Synthesis*

Synthesis involves putting things together to make a unique product, plan, operation, or communication.

Teaching words may include write, tell, produce, transmit, originate, modify, paraphrase, plan, specify, develop, organize, synthesize, formulate, etc.

Synthesis involves seeing structures, patterns, making designs, plans, communications, compositions, schematics, operations, solutions, concepts, schemes, theories, abstractions, generalizations, hypotheses, discoveries, etc.

6) *Evaluation*

This level involves judgments in terms of evidence and criteria. Teaching words at this level involve judge, argue, validate, assess, consider, compare, contrast, appraise, etc. Evaluation involves seeing fallacies, errors, flaws, means alternatives, course of action, standards, theories, generalizations, etc.

Taxonomy of Educational Objectives: Affective Domain

Bloom's Taxonomy in the Affective Domain provides a structure which helps educators to better understand and improve mental processes of receiving, (attending), responding, valuing, organizing and characterizing by a value complex. (While the separate domains, cognitive and affective, do have merit from the perspective of research and development, Bloom and others stress repeatedly the effects of each domain on the other.)

1) *Receiving*

At various levels of this stage the student is aware, is willing to receive, and gives controlled or selective attention to sights, sounds, events, designs, models, rhythms, alternatives, answers, etc.

2) *Responding*

At various levels of responding the pupil complies, volunteers to discuss, or practice, applauds, spends leisure time in, shows satisfaction in, responds to such things as rules, laws, demonstrations, games, drama, speeches, plays, writings, etc.

3) *Valuing*

At this level the student accepts a value or belief, or shows preference and commitment to a value or act in such activities as group membership, artistic production, personal friendships, artists, ideas, ideals, etc.

4) *Organization*

At various levels of this stage the student conceptualizes values, organizes a value system and his/her activity is characterized by a value system (philosophy). He/she subscribes to codes, standards, systems, approaches, criteria, etc.

5) *Characterization by a Value or a Value Complex*

At various stages of this level the pupil's behavior is characterized by a value complex and s/he behaves in keeping with set standards, codes, ethics, integrity, etc.

Categories of both taxonomies can be used with different emphases and activities should be planned accordingly. It is important for the teacher to secure copies of the Taxonomies and study them in detail. See bibliography for references.

Sample Learning Activity Based on Bloom's Taxonomy

In developing units of instruction:

- State content of objectives clearly so that learning outcomes are well understood by students.
- Identify explicitly several different levels of thinking for the students so their learning will not be specifically restricted to rote learning and memorization.
- Describe specific procedures for adapting learning experience to different students. All students have unique needs and abilities.
- Identify one or more learning alternatives (activities) for each objective specified so students have options for learning.
- State what procedure will be used in evaluation of the student performance.

Sample Activity: Understanding the American Colonies

After the main topic is chosen, specifically list the various kinds of knowledge to be gained about it. In this case, these would involve learning.

1. to identify the colonies
2. the related history
3. government and politics
4. food, clothing, housing
5. home life
6. economics
7. sports and recreation
8. religion and beliefs
9. characteristics, needs, and interests

Procedure: Preparing the Content Outline

Gather all the material relevant to these topics from various sources, texts, other books, newer media, and community resources and organize them in relation to the subtopics listed above. Place the subtopics on a grid as suggested in Figure 2. Base the activities and questions on the various levels of the taxonomy. Although not included in the taxonomy, a column has been provided for creativity as this is a most important quality to develop in all children but especially in the gifted, who since they learn more rapidly, will have more time for creative activities.

Incorporating creative learning into the teachers' style and approach helps to identify more effective ways of varying the learning environment to meet the individual learner's needs. Creative learning is natural for children who have a large fund of ideas and who prefer to deal with the abstract as well as personal challenges and concerns. Creativity in selecting activities offers opportunity for intense involvement and active participation. Even high quality intelligence is not a guarantee of creativity, so creativity must be encouraged through practice. Independent inquiry, creativity, and problem solving help to provide an important part of the foundation for more complex research and investigation so necessary for education of the gifted.

Figure 2 suggests the type of grid which may be used. Figure 3 represents an enlarged portion of the grid containing sample questions. For further help in developing questions, consult the State Education Department publication, Questioning Strategies and the book Classroom Questions: What Kinds?, by Norris Sanders.

(Figure 2)

	Knowledge	Comprehension	Creative Thinking	Application	Analysis	Synthesis	Evaluation
Identifying the Colonies							
History, government and politics							
Food, clothing and housing							
Schools							
Sports, recreation and social life							
Religion and beliefs							
Transportation and communication							

Figure 3 represents an enlargement of the grid in Figure 2 and contains some sample questions which might be asked about the several subtopics of the unit of study at the various levels of thinking represented in the taxonomy.

Figure 4 represents the various kinds of activities which could be related to the teaching/learning of this unit. The provision of a wide variety of means for learning about the chosen objectives provides for students' individual learning styles as well as providing for choice preference.

Figure 3

SUGGESTED QUESTIONS AT VARIOUS LEVELS OF TAXONOMY

	Knowledge	Comprehension	Application	Creativity	Analysis	Synthesis	Evaluation
Identifying the Colonies	Fill in the correct names of the 13 colonies on an outline map.	What is a colony? Why did people settle the American colonies?	Describe the location of each colony.	If you were an early settler in America, what would you call your colony? Why?	What were the main geographic factors used as boundaries for the colonies?	Using a blank map, design what you consider to to be better boundaries for the colonies?	Why do you think your boundaries are better?
History Government Politics	Who settled each of the various colonies?	Why were settlement patterns in the various colonies different?	Describe what you might see and feel if you were a Pilgrim landing on Plymouth Rock?	Pretend you were King George of England. What do you think he would think of the American colonies?	Compare and contrast the two methods of government in different colonies.	Develop a kind of government that would have worked in all the colonies.	Explain why your system of government is better.
Food, Clothing Housing	Describe the type of housing used in the different colonies.	What were the reasons why food, housing and clothing differed in the various colonies?	Write a paper contrasting the homes clothing and food of northern and southern colonies.	Pretend you were an early settler in a colony of your choice and describe what kind of food housing and clothing you would use.	Compare and contrast housing in Mass. and Va. and tell what were the reasons for the differences.	What were the basic elements common to housing in all the colonies?	Which colony would you choose to live in? Tell why?

Figure 3 Sample questions which might be asked about the Unit: Understanding the American Colonies".

Figure 4

KNOWLEDGE	COMPREHENSION	APPLICATION	CREATIVE THINKING	ANALYSIS	SYNTHESIS	EVALUATION
Question and answer sessions	Paraphrasing	Role playing	Brainstorming	Comparing and contrasting	Organizing ideas into a new play or production.	Developing criteria for judging on work and peer products and ideas
Programmed instruction	Dramatization	Writing plays stories, newspaper etc.	Creative plays, stories	Making deductions	Writing a play which shows early history of colonies	Evaluating the roles played by Britain America in the American Revolution
Contracts	Essay	Interviewing	Problem solving	Looking for elements of sameness and difference	Describing how history could have been changed by devising a new plan of government	Evaluating reports and other data in the light of historical accuracy or moral rightness
Learning packages	Show and tell	Dramatization	Extrapolating	Isolating key features	Projects depicting some aspect of colonial life	
Worksheets	Peer teaching	Group or individual presentations	Just supposing	Determining cause and effect		
Reading	Debate	Making a model, diorama, or relief map	Open ended questions	Attribute listing		
Viewing		Conducting experiments	Questions calling for divergent thinking, analogies, paradoxes	Problem identification		
Drill		Making predictions				
Practice						
Workbooks						
Worksheets						
Quizzes						

Figure 4 Various activities which could be related to the Unit "Understanding the American Colonies".

Figure 5

Figure 5 A COMPARISON OF LEARNING OBJECTIVES IN VARIOUS SUBJECTS
This chart contrasts learning objectives for the average student with learning objectives for the gifted student which require higher level thinking skills.

SUBJECT	AVERAGE STUDENT	GIFTED STUDENT	TAXONOMY	BLOOM'S THOUGHT PROCESSES
Consumer Education	Compare two different brands of the same item and determine which is the best "buy."	Analyze an advertisement for a product and identify the persuasion aspects from the factual aspects.	Synthesis	compares, contrasts, abstracts
Health Education	Identify the systems of the human body and name the parts of each one.	Explain and justify the necessity for the interrelated nature of the systems of the human body.	Analysis	details, lists, dissects, sees interrelationships
Art	What are the various elements in this painting by David that cause it to be classified as neoclassic?	Redesign this classic style painting into one in the romantic or cubist style.	Anaylsis	analyzes, redesigns, recognizes style elements
Math	Classify a group of shapes into sets, each having one common element.	Organize a group of shapes into sets each having some objects that can also be found in at least two other sets.	Analysis Synthesis	details, relates, categorizes
	Find a pattern in the following groups of numbers 2,3,4 4,5,6 6,7,8 8,9,10, 1,4,3 2,6,4, 3,7,6, 4,8,7.	Look for mathematical pattern in these natural forms, a butterfly, leaves, on a stalk of corn. Find out what is meant by the Fibonnuci interval.	Analysis	analyzes to find pattern patterns for gifted much more complex
Language Arts	Explain the possible thoughts and/or feelings of each character in the fairy tale.	Add one or two characters to the fairy tale whose actions will change the outcome of the story.	Synthesis creativity	creates, combines, redesigns,

FIGURE 6 SAMPLE TEACHER LESSON PLAN SHOWING HOW WORK FOR THE GIFTED STUDENTS IS QUALITATIVELY DIFFERENT

Program Objectives	Grade Levels	Sample Qualitatively Different Activities (Including Materials)	Ways in Which Activities Are Qualitatively Different	Means of Pupil Progress Evaluation
TO PROVIDE FOR STUDENT IN-DEPTH STUDY IN SOCIAL STUDIES AND FINE ARTS.	5, 6	Contemporary advertising. Propaganda as a tool. Trips to advertising agencies. Personal interviews with agency personnel. Phone use to gather information. Speakers in classroom. Seminar discussions. Research on "Advertising Throughout History." Newspaper evaluations. Modern advertising techniques. Psychology of advertisements. Art and advertisements How to develop an advertising campaign.	Delving into a high-level topic, developing individual advertising campaigns. Experience given in communication with specialists using specialized vocabulary and sophisticated philosophies. Use of phone in classroom to hold critiques with students in other seminars. Use of classroom darkroom. Publication of original material. Research into this field would be possible for the highly gifted to accomplish.	Independent Study work sheets kept by each student and used as a basis for periodic student-teacher critiques. Original advertising campaign completed by each student submitted for evaluation by a panel of local advertising professionals. Pre-and-post tests given to the students to judge their level of awareness to propaganda techniques in advertising. Pre-and-post attitude evaluations of the effects of advertisements. May show changes of attitudes. Accomplished through seminar discussion. Parent-teacher-studnet-advertising specialist symposiums held during and/or at conclusion of study.

NOTE: DEVELOPMENT OF SUCH LESSON CHARTS SHOWING QUALITATIVE DIFFERENCES CLARIFY PROGRAM PLANS FOR THE TEACHER AND MAY ALSO BE USED TO ILLUSTRATE TO PARENTS HOW THE PROGRAM IS DIFFERENTIATED FROM CORE PROGRAM.

FIGURE 6 SAMPLE TEACHER PLAN SHOWING HOW WORK FOR GIFTED STUDENTS IS QUALITATIVELY DIFFERENT

Program Objectives	Grade Levels	Sample Qualitatively Different Activities (Including Materials)	Ways in Which Activities Are Qualitatively Different	Means of Pupil Progress Evaluation
TO PROVIDE FOR STUDENT IN-DEPTH STUDY IN A SOCIAL STUDIES AREA.	5, 6	Economics in today's world. What is economics? Banks, money, incomes and savings. Trips to banks and other learning agencies. Personal interviews with professional economists. Phone use to gather information. Speakers in classroom. Readings in _Economics and You_. Newspaper, magazine and television evaluations. Money and the consumer. How to buy and how to save. The value of money. Psychology of the consumer. Math and economics. The development of a new economic system.	Delving into a high-level, sophisticated topic. Trips into the community, giving field experience to the students. Observing people at work: their methods conducive to rewarding personal experiences. Use of phone to conduct interviews and gather background information. Opportunities to conduct individual research using advanced materials. Small-group and individual discussions concerning a complicated area of study. Direct communication with experts. Constant opportunities for student participation in class discussions. The chance for the student to gain insight into himself and the world.	Independent Study work sheets to be maintained by each student and used as a basis for weekly student-teacher critique. Teacher-maintained file cards on each student. To be used during critique. Pre-and-post tests to determine student's knowledge of the economic system he lives under. Pre-and-post attitude evaluation concerning student's concept of economy. Could show change of attitudes. Accomplished through small-group discussion. Comments from parents. Student self-evaluation of effect study has had upon them.

GUILFORD'S STRUCTURE OF INTELLECTUAL MODEL

J.P. Guilford has developed a complex but extremely promising theory of the intellect which is revolutionizing our conceptions of intelligence. His theory is represented in a three-dimensional model which presents the various components and classifications of human intellectual functioning. Guilford has at present discovered over 150 different mental abilities.

The three dimensions of the model specify 1) the operation, 2) the content and 3) the product of any given intellectual act. Every intellectual factor in the model is characterized in terms of the type of operation employed, the content involved and the sort of product which results. Operations are differentiated in five ways: Memory, Cognition, Evaluation, Divergent Production and Convergent Production. Contents are Figural, Symbolic, Semantic and Behavioral. Products fall into six categories Units, Classes, Relations, Systems, Transformations and Implications. The complete scheme is represented by a three-dimensional classification array of 120 predicted cells or categories of intellectual abilities. (Figure 7)

A unique definition can be obtained for each cell by specifying its characteristics in terms of three major dimensions. Each cell is tagged with a trigram that readily identifies its three-way subclassification (e.g. MFU stand for Memory of Figural Units, etc.) There is no hierarchical arrangement of abilities in this model although some are more complex and abstract than others. The following pages explain these components of the model in detail.

Guilford and others believe that in addition to content, students should be deliberately taught these various skills and abilities in a diagnostic remedial approach to education which furthers individualization of instruction by building on pupil strengths and remediating weaknesses.

Several persons and companies have attempted to build curriculum materials and testing procedures based on this SOI model. Chief among these is Dr. Mary Meeker who has developed tests for each of these abilities represented by the model. Each of the cells has been factor analyzed and developed into tasks for strengthening of that particular ability. (See materials list in bibliography.)

THE CURRICULUM IMPLICATIONS OF GUILFORD'S STRUCTURE OF INTELLECT MODEL

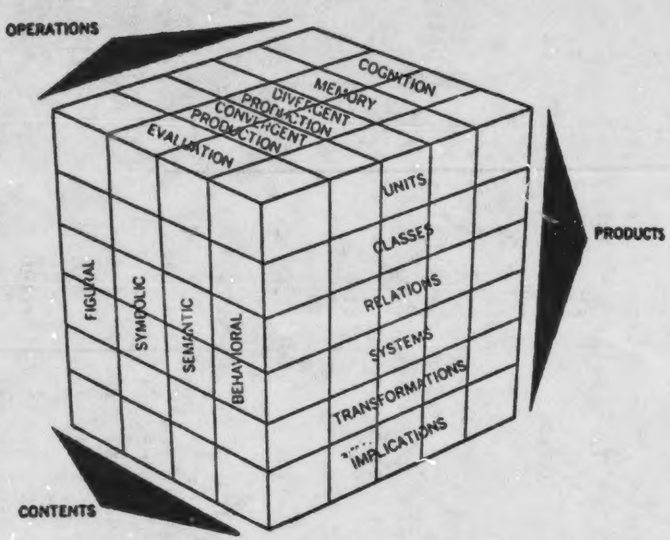
Guilford's model has greatly broadened our conception of intelligence by establishing that intelligence is composed of not one global factor as was formerly supposed but of many different factors. Not only does this new conception of intellect explain individual profiles in strengths and weaknesses in intellectual areas, but it also has many implications for curriculum development for gifted and talented children.

Curriculum for the gifted must reflect this broadened conception and move toward the recognition of many different types of talent and abilities not just the abstract verbal abilities which are identified by traditional intelligence tests. Guilford's theory leads to the realization that teaching students to think is too vague a goal.

Figure 7

TEACHING LEARNING MODEL

Guilford's
Structure of the Intellect



Purpose: This structure presents the various components and classification of the intellectual factors. It indicates that an ability is a combination of an operation or process, a content, and a product.

Implications	Applications
Analysis of teaching strategies	Individualizing instruction, classroom discussions, questioning, in-service training
Evaluation of student performance abilities	Developing strengths, correcting weakness, parent-teacher discussions, student placement, setting goals and objectives
Assigning of appropriate learning activities to the gifted	Emphasizing divergent and evaluative thinking operations
Applying to learning experiences	Differentiating the curriculum, developing curriculum

Products

Units--Items of information having "thing" character
Classes--Items of information grouped for their common properties
Relations--Connections between units of information
Systems--Organized or structured aggregates of items of information
Transformations--Changes of various kinds in existing or known information or in its use
Implications--Extrapolations of information, in the form of expectancies, predictions, known or suspected antecedents, concommitants, or consequences

Operations:

Cognition--Recognizing problems, needs
Acquiring knowledge
Memory--Recalling facts
Convergent Production--Finding an anticipated and/or correct answer
Divergent Production--Producing an original unexpected response
Evaluation--Reaching decisions; making judgements

Contents:

Figure content--Information in concrete forms, as perceived or as recalled in the form of images
Symbolic content--Information in form of signs, such as letters, numbers, musical notations, and other "code" elements
Semantic content--Information in the form of meanings to which words commonly become attached
Behavioral content--Information, essentially nonverbal, involved in human interactions (22).

From Providing Programs for the Gifted Talented: A Handbook, Sandra Kaplan, Ventura County Schools, Ventura, Cal. 1974.

There are a variety of ways of thinking. Curriculum for the gifted should recognize the complexity of the thinking process and provide specific ways of fostering each component of it.

Another of Guilford's contributions is the insight he offers into creative thought processes. By specifying Divergent Thinking Production as one of the major thought processes he has stimulated much work in the area of creative thinking and problem solving. Finally, the Structure of the Intellect model reveals the complex interrelationships of various abilities. Although not rigidly hierarchical, the model suggests that higher level abilities such as convergent and divergent production and evaluation, may be dependent on the lower level functions such as cognition and memory. Divergent production, for example, depends on a fund of knowledge.

Guilford's model suggests that curriculum for the gifted needs to:

- Be flexible, rather than rigid and confined or strictly outlined to provide opportunity to change and to seek higher levels of content.
- Be open ended, to provide for unlimited content areas so that pupils may initiate thinking with a greater variety of ideas.
- Be an interaction between pupils to seek new dimension of content, inviting differences of opinion as a natural learning technique.
- Utilize brainstorming techniques occasionally to reenforce evaluative principles such as deferred judgment, in arriving at meaningful decisions.
- Provide for learning to restructure and combine ideas in order to redefine old ideas into new dimensions.
- Provide opportunity for divergent thinking.
- Stress the concepts of originality and inventiveness as a means of reaching new solutions to problems.
- Provide time to think about and incubate new ideas and solutions.
- Establish problems that stimulate many ideas and new solutions, reinforcing fluency of thought.
- Reinforcing spontaneous flexibility through eliminating barriers to thinking and encouraging idea associations.
- Invite new predictions and implications about content under discussion.
- Develop questions about changes and transformations in content under discussion.
- Encourage elaboration upon ideas to provide new and more complex details.

COMPONENTS OF THE STRUCTURE OF INTELLECT

MAJOR PROCESSES

(Intellectual activities which the organism does with the raw materials of information.)

(C) COGNITION: Discovery, awareness, rediscovery, or recognition of information in various forms; comprehension; understanding.

(M) MEMORY: Retention of information in any form.

(N) CONVERGENT PRODUCTION: Generation of information from given information, where emphasis is upon reproducing conventionally accepted, or achieving, best outcomes.

(D) DIVERGENT PRODUCTION: Generation of information from given information, where the emphasis is upon variety of output from same source. (Innovation, originality, unusual synthesis or perspective.)

(E) EVALUATION: Reaching decisions or making judgments concerning the correctness, suitability, adequacy, desirability of information in terms of identity, consistency, and goal satisfaction.

CONTENTS

(General varieties of information)

(F) FIGURAL CONTENT: Information in concrete form, as perceived or as recalled in the form of images; "figural" implies some degree of organization, of structuring.

(S) SYMBOLIC CONTENT: Information in the form of signs, having no significance in and of themselves, such as letters, numbers, musical notes.

(M) SEMANTIC CONTENT: Information in the form of meanings to which words commonly become attached, hence most notable in verbal thinking; involved in verbal tests, where things signified by words must be known.

(B) BEHAVIORAL CONTENT: Information essentially non-verbal, involved in human interactions, where awareness of attitudes, needs, desires, intentions, thought etc., of other persons is important.

PRODUCTS

(Results from the organism's processing of information)

(U) UNITS Segregated or circumscribed items of information having "thing" character.

(C) CLASSES. Aggregates of items of information grouped by common properties.

(R) RELATIONS. Recognized connections between units of information based upon variables that apply to them.

(S) SYSTEMS: Organized or structured aggregates of items of information; complexes of interrelated or interacting parts.

(T) TRANSFORMATIONS: Changes in existing or known information or in its use as in production.

(I) IMPLICATIONS: Extrapolations of information, in the form of expectancies predictions, antecedents, and consequents.

GLOSSARY

1 - COGNITION = C

FIGURAL INPUT :

CFU UNITS Visual Recognition: The ability to recognize familiar figures
Auditory Figural Recognition: The ability to recognize meaningful vocal material.

CFC CLASSES: Figural Classification: The ability to classify perceived objects.

CFR RELATIONS: Education of Figural Relations: The ability to discover relations in perceptual material.

CFS SYSTEMS: Spatial Orientation: The ability to perceive spatial patterns or to maintain orientation with respect to objects in space.

CFT TRANSFORMATIONS: Visualization: The ability to manipulate or transform an object into another visual arrangement.

CFI IMPLICATIONS: Perceptual Foresight: The ability to explore visually possible courses of action in order to select the most effective ones.

SYMBOLIC INPUTS:

CSU UNITS Symbol Recognition: The ability to construct a word using designated letters.

CSC CLASSES: Recognition of symbolic classes: Seeing common features of numbers.

CSR RELATIONS: Symbolic Relations: The ability to discover relations involving letter patterns.

CSS SYSTEMS: Symbolic Patterns: The ability to discover complex relationships--patterns or systems.

CST TRANSFORMATIONS: Symbolic Transformation: The ability to observe reorganization of symbols.

CSI IMPLICATIONS: Cognition of Symbolic Implications. Rearranging symbols in a specified order.

SEMANTIC INPUTS:

CMU UNITS Verbal Comprehension: Vocabulary, Reading Comprehension.

CMC CLASSES: Conceptual Classification: Classifying words and sentences; the ability to classify verbal concepts.

CMR RELATIONS: Semantic Relations: The ability to discover relations in conceptual material.

CMS SYSTEMS: General Reasoning: The ability to comprehend or structure problems in preparation for solving them.

CMT TRANSFORMATIONS: Penetration: The ability to see several meanings to a word or expression.

CMI IMPLICATIONS: Conceptual Foresight: The ability to anticipate the needs or the consequences of a given situation.

2 - MEMORY = M

FIGURAL INPUTS:

MFU UNITS Visual Memory: The ability to recall material learned by visual presentation. Auditory Memory: The ability to recall meaningful sequences of auditory stimuli.

MFC CLASSES: Space Memory: The ability to identify forms previously learned. Position Memory: The ability to recall number-word combinations.

MFS SYSTEMS: Memory for Spatial order: The ability to recall an arrangement of objects previously presented.

SYMBOLIC INPUTS:

MSU UNITS Memory Span: The ability to recall perfectly for immediate reproduction a series of items after only one presentation of the series.

MSR RELATIONS: Rote Memory: The ability to remember pairs of meaningless sets of letters, syllables, numbers.

MSI IMPLICATIONS: Numerical Facility: Memory for well-practiced number operations.

SEMANTIC INPUTS:

MMU UNITS: Memory for Ideas: The ability to reproduce previously presented ideas.

MMR RELATIONS: Meaningful Memory: The ability to remember meaningful pairs of words

MMS SYSTEMS: Memory for Temporal Order: The ability to remember the order in which previous material was presented or order in which events occurred.

3 - DIVERGENT PRODUCTION = D

FIGURAL INPUTS :

DFU UNITS : Ability to group and regroup line elements in various ways.

DFC CLASSES : Figural Spontaneous Flexibility: Ability to reclassify perceived objects in various ways.

DFS SYSTEMS : (New) Ability to construct varied organizations of same units.

DFT TRANSFORMATIONS : Figural Adaptive Flexibility: The ability to change set in order to meet new structural requirements imposed by changing problems.

DFI IMPLICATIONS : (New) Ability to elaborate upon given lines or outlined objects.

SYMBOLIC INPUTS:

DSU UNITS The ability to produce rapidly words fulfilling specified structural requirements.

DSC CLASSES : Ability to reclassify letters or numbers or sets of them in various ways. (New)

DSR RELATIONS : Ability to generate a variety of relations between numbers or letters. (New)

DSI IMPLICATIONS : Ability to derive a variety of consequences from a symbolic expression. (New)

DSS SYSTEMS : Ability to produce letter or number systems (as in codes and equations). (New)

SEMANTIC INPUTS :

DMU UNITS, Ideational Fluency: The ability to call up many ideas in a specified class.

DMC CLASSES ; Semantic Spontaneous Flexibility: The ability to produce a list of ideas from different classes.

DMR RELATIONS: Associational Fluency: The ability to produce words from a restricted area of meaning such as synonyms or adjectival completion for a simile, or producing associated words.

DMS SYSTEMS: (New) Expressional Fluency: Ability to organize phrases and sentences.

DMT TRANSFORMATIONS: Originality: The ability to produce remotely associated, clever, or uncommon responses: plot titles, new symbols, ideas.

DMI IMPLICATIONS: Semantic Elaboration: The ability to specify details that contribute to the development of a scheme or the variation of an idea.

4 - CONVERGENT PRODUCTION = N

FIGURAL INPUTS:

NFT TRANSFORMATIONS Figural Redefinition: The ability to give up one perceived organization of lines in order to see another.

NFI IMPLICATIONS: Form Reasoning: The ability to solve simple equations in terms of familiar forms. Also to substitute one operation for another.

SYMBOLIC INPUTS:

NSR RELATIONS Symbolic Correlates: The ability to find a non-verbal response to fulfill a given relationship.

NSS SYSTEMS: Convergent Production of Symbolic Systems: State the order in which words or numerical operations should go to get from start to stated goal.

NSI IMPLICATIONS: Symbol Substitution: The ability to derive a symbol.

SEMANTIC INPUTS:

NMU UNITS: Concept Naming: The ability to state correct names of concepts and ideas.

NMC CLASSES: Convergent Production of Semantic Classes: Forming correct groups from a large number of words or pictured objects.

NMS SYSTEMS: Ordering: The ability to arrange objects or events into a meaningful sequence.

NMR RELATIONS: Semantic Correlates: The ability to produce a response to fit a given or implied conceptual relation like naming direct opposites.

NMT TRANSFORMATIONS: Semantic Redefinition: The ability to shift the function of an object or part of an object and use in a new way.

NMI IMPLICATIONS: Deduction: Ability to state correct deduction from given facts.

5 - EVALUATION = E

FIGURAL INPUTS:

EFU UNITS Figural Identification: The ability to find a figure identical to a given figure among similar figures.

EFC CLASSES: Length Estimation: The ability to compare the length of lines or distances.

SYMBOLIC INPUT:

ESU UNITS Symbolic Identification: The ability to recognize identical letters or numbers.

ESR RELATIONS : Symbol Manipulation: The ability to decide which letter relations are consistent with others .

SEMANTIC INPUTS:

EMR RELATIONS: Logical Evaluation: The ability to use logical relationships in the testing of the correctness of a conclusion.

THE WILLIAMS COGNITIVE AFFECTIVE INTERACTION MODEL

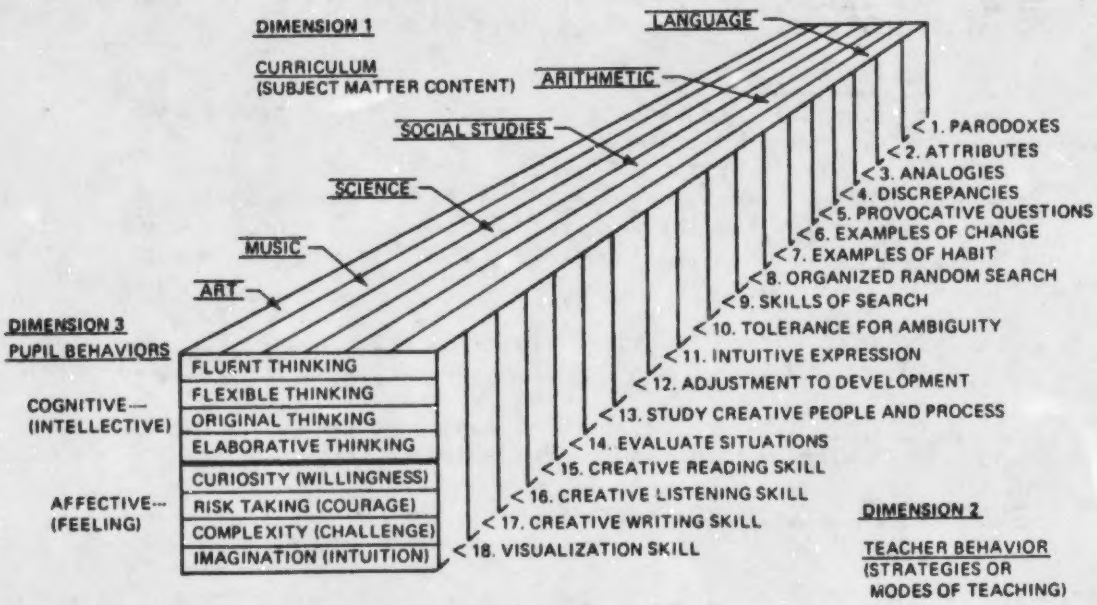
Recognizing the importance of educating the emotions as well as the intellect, Williams (1977) developed a model which attempts to aid the teacher to combine cognition(knowing) and affect(feeling). He has also developed strategies for accomplishing this goal in his book, Classroom Ideas for Thinking and Feeling, D.O.K. Publishers, Buffalo, N.Y.

This model (Figure 8) show the interrelationships between Dimension I, subject matter areas, Dimension II, teacher strategies and Dimension III, pupil behavior in four cognitive and four affective areas. Teaching styles or strategies become a means through subject matter content toward the end of fostering eight thinking and feeling pupil behaviors. As one considers these eighteen teaching strategies, which can be appropriately applied across all subject matter areas, a vast number of learning combinations become apparent.

Dimension III consists of eight processes deduced from theoretical studies of how children think and feel divergently. These divergent production factors are certainly most crucial when encouraging a child's creative potential, but have received far less attention, or have been commonly ignored, in the traditional curriculum and classroom.

Figure 8 THE WILLIAMS MODEL

A Model for Implementing Cognitive-Affective Behaviors in the Classroom *


DIMENSION 1
CURRICULUM
(SUBJECT MATTER CONTENT)
LANGUAGE
ARITHMETIC
SOCIAL STUDIES
SCIENCE
MUSIC
ART
DIMENSION 3
PUPIL BEHAVIORS
COGNITIVE—
(INTELLECTIVE)
FLUENT THINKING
FLEXIBLE THINKING
ORIGINAL THINKING
ELABORATIVE THINKING
AFFECTIVE—
(FEELING)
CURIOSITY (WILLINGNESS)
RISK TAKING (COURAGE)
COMPLEXITY (CHALLENGE)
IMAGINATION (INTUITION)
< 1. PARODOXES
< 2. ATTRIBUTES
< 3. ANALOGIES
< 4. DISCREPANCIES
< 5. PROVOCATIVE QUESTIONS
< 6. EXAMPLES OF CHANGE
< 7. EXAMPLES OF HABIT
< 8. ORGANIZED RANDOM SEARCH
< 9. SKILLS OF SEARCH
< 10. TOLERANCE FOR AMBIGUITY
< 11. INTUITIVE EXPRESSION
< 12. ADJUSTMENT TO DEVELOPMENT
< 13. STUDY CREATIVE PEOPLE AND PROCESS
< 14. EVALUATE SITUATIONS
< 15. CREATIVE READING SKILL
< 16. CREATIVE LISTENING SKILL
< 17. CREATIVE WRITING SKILL
< 18. VISUALIZATION SKILL
DIMENSION 2
TEACHER BEHAVIOR
(STRATEGIES OR
MODES OF TEACHING)

Purpose: Presents the dimensions of content-teaching processes and student behavior to emphasize the strands of possibilities within each dimension. Provides a vehicle for intersecting a given subject area with any teaching strategy. Extends the breadth of cognitive learning (53).

IMPLICATIONS	APPLICATION
Realizing the scope of thinking processes	Extending or developing curriculum

*From the Kaplan Program Planning Handbook

DIMENSION 2
Teacher Behaviors (Strategies)

THE WILLIAMS MODEL

1. PARADOXES ; Common notion not necessarily true in fact. Self-contradictory statement or observation.

2. ATTRIBUTES: Inherent properties, conventional symbols or identities, ascribing qualities.

3. ANALOGIES: Situations of likeness, similarities between things, comparing one thing to another.

4. DISCREPANCIES: Gaps or limitations in knowledge, missing links in information, what is not known.

5. PROVOCATIVE QUESTIONS: Inquiry to bring forth meaning, incite knowledge exploration, summons to discovering new knowledge.

6. EXAMPLES OF CHANGE: Demonstrate the dynamics of things, provide opportunities for making alterations, modifications, or substitutions.

7. EXAMPLES OF HABIT: Effects of habit-bound thinking , building sensitivity against rigidity in ideas and well-tried ways.

8. ORGANIZED RANDOM SEARCH : Using a familiar structure to go at random to build another structure. An example from which new approaches occur at random.

9. SKILLS OF SEARCH: Search for ways something has been done before (historical search). Search for the current status of something (descriptive search) Set up an experimental situation and search for what happens (experimental research),

10. TOLERANCE FOR AMBIGUITY: Provide situations which puzzle, intrigue, or challenge thinking. Pose open-ended situations which do not force closure.

11. INTUITIVE EXPRESSION: Feeling about things through all the senses, skill of expressing emotion . Be sensitive to inward hunches or nudges.

12. ADJUSTMENT TO DEVELOPMENT: Learn from mistakes or failures.Develop from rather than adjust to something Developing many options or possibilities.

13. STUDY CREATIVE PEOPLE AND PROCESS: Analyze traits of eminently creative people Study processes which lead to problemsolving, invention incubation and insight.

14 EVALUATE SITUATIONS: Deciding upon possibilities by their consequences and implications.Check or verify ideas and guesses against the facts.

15. CREATIVE READING SKILL: Develop a mind-set for using information that is read.Learning the skill of generating ideas by reading.

16. CREATIVE LISTENING SKILL; Learning the skill of generating ideas by listening. Listen for information allowing one thing to lead to another.

17 CREATIVE WRITING SKILL: Learning the skill of communicating ideas in writing. Learning the skill of generating ideas through writing.

18 VISUALIZATION SKILL: Express ideas in visual form. Illustrating thoughts and feelings. Describing experiences through illustrations.

DIMENSION 3

WILLIAMS MODEL PUPIL BEHAVIORS

Behavior	Meaning

COGNITIVE - INTELLECTIVE

FLUENT THINKING: To think of the most-- Generation of a quantity flow of thought. Number of relevant responses.

FLEXIBLE THINKING: To take different approaches--Variety of kinds of ideas. Ability to shift categories. Detours in direction of thought.

ORIGINAL THINKING: To think in novel or unique ways--Unusual responses. Clever ideas. Production away from the obvious.

ELABORATIVE THINKING: To add on to--Embellishing upon an idea. Embroider upon a simple idea or response to make it more elegant. Stretch or expand upon ideas.

AFFECTIVE - TEMPERAMENT

RISK TAKING: To have courage to--Expose oneself to failure or criticisms. Take a guess. Function under conditions devoid of structure. Defend own ideas.

COMPLEXITY: To be challenged to--Seek many alternatives. See gaps between how things are and how they could be. Bring order out of chaos. Delve into intricate problems or ideas.

CURIOSITY: To be willing to--be inquisitive and wonder. Toy with an idea. Be open to puzzling situations. Ponder the mystery of things. To follow a particular hunch just to see what will happen.

IMAGINATION: To have the power to--Visualize and build mental images. Dream about things that have never happened. Feel intuitively. Reach beyond sensual or real boundaries.

CONTENT, PROCESS, PRODUCT: AN INTEGRATION OF THE MODELS

Current curriculum materials for the gifted have made considerable progress beyond the enrichment versus acceleration debate. It is now assumed that each of these two approaches has its appropriate uses depending on the student and his/her needs. Each approach also has its limitations. Neither a haphazard shotgun approach to enrichment nor a moving down of the materials from upper grade levels will satisfactorily serve for a truly differentiated curriculum for the gifted.

Within the past decade, efforts have been concentrated on creating curriculum which is based on an integration of the various theoretical models described previously. What has emerged is a three part view of the curriculum which explores content, product and process.

1. Content-The key factors in selection of content for the gifted are intellectual challenge, stimulus to the exploration of further knowledge, and understanding of broadly applicable concepts. Content focuses on subject matter, the facts, concepts and generalizations of the various disciplines.

   - In-depth and open-ended exploration of special interests are encouraged both in the form of independent study and in more highly structured sequences of instruction.

   - Areas not usually covered in traditional courses of study may be included such as psychology, philosophy, cultural anthropology, humanities, logic, critical thinking, and others.

2. Process refers to:

   - The development of skills in applying knowledge and the development of intellectual operations, especially the higher level cognitive processes in which the gifted typically have so much potential. These processes include:

     - The more abstract cognitive operations and complex processes, products of Guilford's SOI model, divergent production, evaluation, transformation, and implications.

     - The higher levels of Bloom's Taxonomy of Objectives in the Cognitive Domain, analysis, synthesis, evaluation, and

     - Krathwohl's Affective Categories including attitudes, appreciations and values.

     - Also included are the creative processes of fluency, flexibility, elaboration, and originality and the problem solving and inquiry skills.

3. Product refers to that which the student make or does. All research and study should culminate in some kind of product, a poem, play, essay, report, performance, drawing or other concrete evidence that learning has occurred, appreciations have been engendered, attitudes changed or some other change has occurred either overt or covert. Production is important

for all students but especially so for the gifted for many of these have the potential to become true producers of knowledge. But no matter how great their intellect, if they have failed to develop good communication and production skills their ideas may never materialize for use by others. Student productions must be treated with consideration and appreciation. If possible, an audience or arena for their work should be found. They should be helped to find ways to make genuine social contributions even while still in school.

A Word of Caution

In constructing curricula, and in utilizing the commercial materials based on the theoretical models, it is important to realize that content, process and product should not be separated. While it is important for students to practice the higher level thought processes and those exercises related to creativity, there is no research that the practice of such exercises in isolation from developmental and meaningful content results in improved achievement. Use of such materials and exercises in isolation from meaningful content is not defensible. Moreover, such practice can result in lack of achievement and consequent discreditation of programs. The content must be carefully chosen and the thinking and creativity and other processes related to that content. They must demonstrate different behavior as a result of the learning activities.

SUGGESTIONS FOR CHOICE OF SUBJECT MATTER: PROGRAM DESIGN MODELS

The Tannenbaum Model

In addition to the theoretical models useful for development of teaching strategies, there are also program design models. Tannenbaum (1978) provides such a program design based on the following rationale. He points out that educators must work to make the case for unique education for the gifted by developing differentiated curricula based on the unique characteristics of the gifted. At present, most programs involve the use of provisions by specialists who come into the school for a brief period---poets, artists or itinerant teachers. Or, teachers use materials which have been developed commercially by others without reference to differentiated curriculum content.

Tannenbaum believes that a unique curriculum for the gifted which parallels the regular curriculum should be developed and offers a model for such program development. His suggested model is based on the following set of assumptions:

- Assumption 1: There is a body of curriculum which is appropriate for all children.

This common area consisting of such subjects as math, language arts, social studies, science and the arts has been agreed upon by society as a body of knowledge that all persons need to function in society. Educators have turned this common core of knowledge into a fixed, structured, developmental curriculum for all children. However, this common core excludes some areas of knowledge which are becoming increasingly important such as cultural anthropology, psychology, geopolitics, future studies and other areas of useful knowledge and skills.

Assumption 2: Gifted children should have experiences not bounded by the common core.

Studies for the gifted should be as serious, important and permanent for the gifted as the common core is for all. The enrichment experiences of gifted should be permanent and not subject to the transient fads and interests of children. Therefore schools should develop well structured, permanent enrichment curriculum for the gifted.

Assumption 3: There is a basic difference between gifted children and bright children.

Tannenbaum states that schools are set up for consumers of knowledge--those persons who acquire knowledge, insights and appreciations of ideas. Some of the so-called gifted are only high level consumers of knowledge. They have rapid mastery of content areas but they remain consumers of knowledge. They are not producers of knowledge in their field.

Producers, on the other hand, introduce new knowledge. These are the inventors, the creators, the people who make the break-throughs. The potential producer must have some experiences that are different from those offered in the common core. They need the content and skills to become producers even while they are still at school. Programs for the gifted must include such exploratory experience. Such a child must have different training; otherwise he/she will remain just a consumer.

Of course, the personality characteristic cluster assumes importance here, for the person who lacks task commitment, who is unwilling to sacrifice to reach goals, may not become a producer even though she/he has such potential. There is also the chance factor. Life may not put the gifted person in a position where she/he can use his/her potential to produce. Unfortunately, there is little research on personality factors to guide us at present. However, we know that the true producer must have dedication and task commitment.

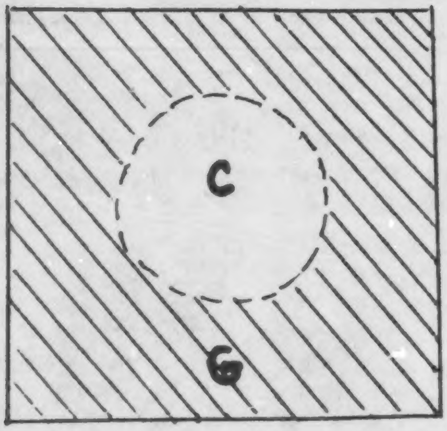


FIGURE 9. THE TANNENBAUM MODEL

The small circle in Fig. 9 represents the common core curriculum for all children, the outer square represents program augmentation for the gifted. There should be a semipermeable membrane between the circle and the square which represents continuous access to the gifted program so that all children have an opportunity to see if they are gifted.

The set of assumptions above are used as a basis for curriculum development. The grid below represents a frame on which to develop the augmented curriculum as extensions of the common core. The curriculum for the gifted will include both the common core and bodies of knowledge which are increasingly important in society. The content for the gifted will also serve as a forerunner for the common core curriculum. Much content now part of the regular curriculum began as an innovation for the gifted (eg. modern math, some aspects of chemistry and physics.) Thus, the augmented curriculum for the gifted serves as the frontier and cutting edge which will bring about beneficial change and advances in the core curriculum.

Figure 10

SUBJECTS OF THE CORE CURRICULUM

AUGMENTED CURRICULUM FOR THE GIFTED
(Cells to be filled out by educators)

GRADES	K	1	2	3	4	5	6	7	8	9	10	11	12
LANGUAGE AND ARTS													
SOCIAL STUDIES													
SCIENCE													
MATH													
MUSIC AND ART													
INTERDISCIPLINARY STUDY													
INDEPENDENT STUDY													

Program augmentation would involve:

. The expansion of basic skills and competencies. The producer needs a more intensive study of the basic skills and needs extra skills the consumer doesn't use. Some other expansions of the basic subjects might include such subjects as semantics, logic, critical thinking, probability and statistics, and computer languages. If the regular class studies history, the gifted might also explore future studies.

. A wider range of subject matter. If the regular class reads one novel, the gifted might read two or three on the same theme. If the regular class studies the American colonies, the gifted could study the same period in Europe at the same time. However, whatever is studied must be in a programatic sequence that follows, or grows out of and parallels, the common core.

. Provisional augmentation may also be included when the student has special interests or the teacher some special competency he/she can share. Thus, the teacher can not only share expertise, but in so doing serves as a role model for students.

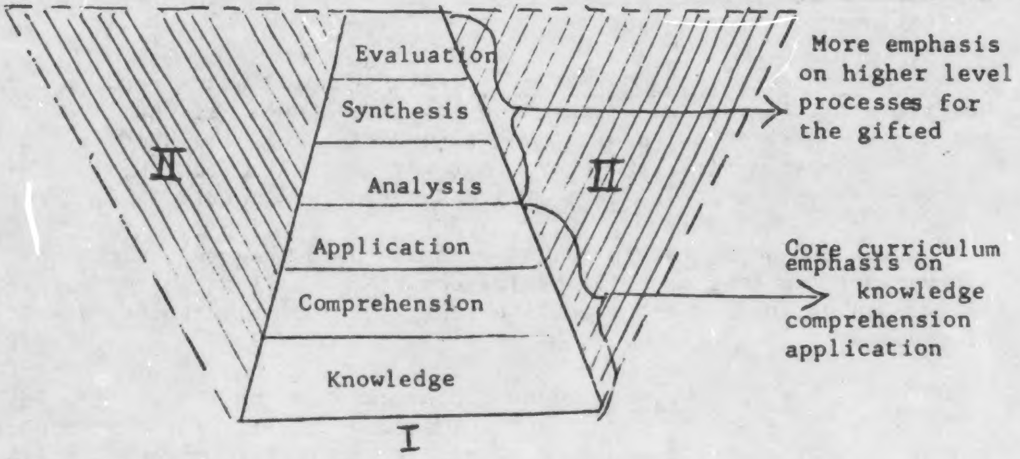
. Out of school augmentation. No school can provide for all the interests of children. The school day is not long enough and it is too structured. Students require outside experience, not just visits to museums or libraries, worthy as these activities are. Human resources must also be employed in situations where children are so far ahead of their teachers in some areas that there isn't enough talent in the school to provide for them. But every community has its professionals, and educators must help children to find suitable mentors to develop their talent, as well as opportunities for apprenticeships where appropriate.

. Affective development, social responsibility and career awareness. While the gifted require more work with abstract knowledge and higher level intellectual skills, they also need to develop worthy values and come face to face with the social responsibilities of productivity. The pursuit of knowledge unguided by humane ethic can produce disaster. Their emotions and sense of social responsibility must be developed as well as their intellect. They must gain an understanding of the personal responsibility of being gifted and the humane consequences of their products. Moreover, in addition to learning to use their gifts for the good of society, they must also learn to fulfill life expectations and acquire a rich inner life through humanistic studies.

Since the gifted have such a wide range of talents they have the potential to be successful in a variety of careers but to do so they must be acquainted with the possibilities available both now and in the future. Attention must be paid to the various learning modes such as problem-solving and independent study. Learning strategies must be employed which are based on the characteristics of the gifted. In using Bloom's Taxonomy, a model for the gifted could be developed as in Figure 11.

Area I represents the strategies used for common core students where much emphasis is placed on the lower levels of knowledge, comprehension and application. For gifted students the shaded Area II represents the amount of such strategies employed for gifted students, which provides all of the core strategies but also places more emphasis on the higher level processes of analysis, synthesis and evaluation.

FIGURE 11. TEACHING/LEARNING STRATEGY EMPHASIS BASED ON BLOOM'S TAXONOMY-COGNITIVE DOMAIN



More emphasis on higher level processes for the gifted

Core curriculum emphasis on knowledge comprehension application

THE ENRICHMENT TRIAD MODEL

Dr. Joseph Renzulli offers another program model design (Figure 12) for the gifted entitled The Enrichment Triad, which consists of three types of enrichment activities:

TYPE I, GENERAL EXPLORATORY ACTIVITIES

The aim here is to give the student a wide variety of opportunities to be exposed to different areas of potential interest to help them and their teacher find out what their true interests are. However, this is not idle, aimless exploration. Pupils are expected to explore purposefully and, after a time, to analyze their experiences and come up with suggestions for further study. These topics of interest may grow out of the regular curriculum or the students own special interests. Students not willing to engage in anything but exploratory activities should be reevaluated and perhaps counseled out of the program.

To spark interest the teacher should:

- Create "Interest Centers" about a variety of topics in various fields of study.
- Take students on field trips where they can see people engaged in problem solving as in laboratories or other areas of work. Trips to museums should not be merely look-see excursions but opportunities for students to become actively involved.
- Invite resource persons with advanced knowledge in their fields to share experiences with students.
- Encourage browsing in libraries or book stores to awaken interest.
- Provide "Brainstorming" questions about topics, issues and events which expose students to areas of knowledge not in the regular curriculum.
- Provide materials related to the interests of students.

TYPE II, ENRICHMENT: GROUP TRAINING ACTIVITIES

Type II Enrichment is concerned with process; exercises in the development of thinking and feeling. Rather than assimilating facts and conclusions the student develops powers of the mind that enable him to deal more effectively with content. Skills such as creative and productive thinking, problem solving, inquiry, divergent thinking, and awareness activities are developed. Students would engage in such processes as:

brainstorming
analysis
synthesis
elaboration
values clarification

observation
evaluation
fluency
hypothesizing

classification
comparison
flexibility
awareness

interpretation
categorization
originality
appreciation

See other processes described in relation to the models.

Bloom's taxonomies and the Structure of Intellect provide carefully developed systems for classifying cognitive and affective behaviors of the human mind suggested above. Research indicates that such processes are transferable to new learning situations and once acquired enable students to develop problem solving skills. The rationale for this practice is that there is too much to teach and we do not know what problems the future will pose and so it is useful to help the student to develop problem solving skills so that s/he can solve new problems as they arise. But the processes should be related to some meaningful content. After all, the student has to think or be creative about something. Process should be the means for learning, not the end goal.

Such process activities are defensible in that they help students

- Escalate their thinking and feeling powers and processes and develop advanced levels of thinking.
- Learn more about advanced studies.
- Acquire the skills and abilities to solve problems in a variety of areas.

TYPE III, ENRICHMENT: INDIVIDUAL AND SMALL GROUP INVESTIGATION

Type III Enrichment encourages the student to investigate a real problem or topic by using appropriate methods of inquiry so that s/he can become a producer of knowledge. The student researches, gathers raw data about a real problem, analyzes the data, comes to conclusions and communicates them in some meaningful way--not just in a report to the teacher.

The teacher's role is:

- To help the student find his/her true interests.
- To provide him/her with the tools or methodological techniques necessary to solve the problem as well as the opportunity to do so.
- To assist in the meaningful, real use of the knowledge s/he discovers through publication or other means of securing an audience or arena for his/her activities.

Renzulli defends such student research activity on the basis of research into the lives of persons who have achieved eminence. He states that the research indicates that such producers of knowledge have:

- Higher that average intelligence (but not necessarily an exceptionally high IQ.)
- A high level of task commitment.
- Early and varied interests which involve relatively intense commitments.
- Creativity, which may be the "yeast" which causes the other traits to activate.

But in order for these traits to interact and manifest themselves, these potential producers must have some type of problem to deal with or a certain arena in which to perform. Some of these achievers have not done well academically. Thus, as Renzulli points out, if IQ and test scores are the only criteria used for identifying the gifted many may be overlooked. He believes that we can increase the number of creative producers by helping gifted students learn how a really "turned on" professional works and feels about his work.*

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*The Enrichment Triad, Joseph Renzulli, Creative Learning Press, Wethersford, Conn. 1977.

A Sample Enrichment Triad Approach

TYPE I - Enrichment: General Exploratory Activities

- Bury common objects of our culture in a garden and take the students on a dig
- Take a field trip to the Museum of Natural History.
- Create an archeology section in the class library.
- Invite a speaker from the museum to address the class.
- Show slides and/or films of digs around the world.

TYPE II - Enrichment: Group Training Activities

- The findings of the class dig (see above) are discussed and analyzed in a small group to identify them and determine their place in the culture.
- Small group brainstorming on the topic: What are the most important elements of a culture?
- Small group analysis: What objects could be gathered which would best represent our current culture?
- Small group classification: What are the common problems of a culture?
- Debate teams: What aspects of a culture survive their destruction?
- Small group teams to hypothesize: Identify some of the elements of our future culture.

TYPE III - Enrichment: Individual and small group investigation

- Create your own culture including all the vital aspects. i.e. language, dress etc.
- Analyze an ancient culture and relate its pattern to its way of life.
- Compare two cultures and define their similarities and differences.
- Address any two aspects of at least five different cultures and demonstrate how they are similar and different.

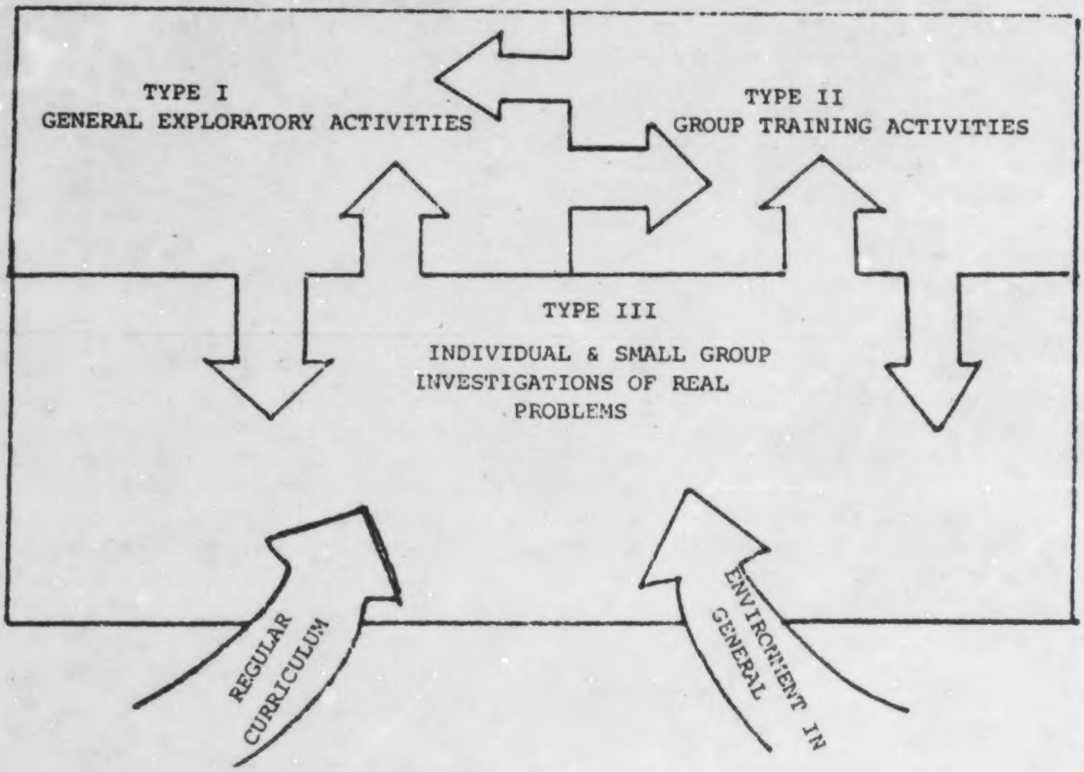
TYPE I
GENERAL EXPLORATORY ACTIVITIES
TYPE II
GROUP TRAINING ACTIVITIES
TYPE III
INDIVIDUAL & SMALL GROUP INVESTIGATIONS OF REAL PROBLEMS
REGULAR CURRICULUM
ENVIRONMENT IN GENERAL

FIGURE 12 THE ENRICHMENT TRIAD MODEL

Renzulli stresses:

- The importance of task commitment in productive persons.
- The difference between teacher-presented exercises and the investigative activity involved in solving a real problem.
- The importance of the modus operandi of the professional. The student should learn how scholars and professionals work to discover knowledge.
- The importance of real student products not just reports to the teacher.
- The importance of allowing students the freedom of selecting their own areas of interest for investigative activity.

Renzulli has produced a useful questionnaire to discover student interests entitled the Interestalyzer which can be used as a tool for interest refinement and focus which is available commercially. (Creative Learning Press)

Teacher competencies involved in promoting Type III Enrichment involve:

- Knowledge of inquiry and discovery techniques. Suchman (1966), Taba (1965), Massialias and Cox (1966) provide helpful material for use of these processes.
- Learning to distinguish between methodological resources and other types of references.
- Acquiring skill in developing a laboratory environment where inquiry and discovery can go on. Environments may be something as simple as the school cafeteria or playground or they may involve other institutions and areas in the community. The point is to learn how to use these areas as environments for inquiry and discovery.

The model is explained in detail in Renzulli's book The Enrichment Triad, (Creative Learning Press, Wethersford, Conn.)

THE FELDHUSEN PROGRAM DESIGN MODEL

Feldhusen (Purdue University, 1977) has also developed a program model which emphasizes higher level cognitive learning, professional application, and learning which has been used successfully at the high school level and holds promise for the design of programs at the elementary and secondary levels. The guidelines suggest that properly identified pupils should be organized in small groups which meet twice a week for guidance and enrichment activities. The stress is on higher level thinking, stimulating activities, challenging reading and discussion. Such classes may be organized in different ways by resource or homeroom teachers or by team efforts. The design involves three levels of instructional activity as listed on the chart in Figure 13. The materials listed in the columns on the right represent the type of activities for each stage.

Figure 13

Feldhusen's Three-Stage Model for Enrichment Activities*

Stage 1 Divergent and Convergent Thinking Abilities

Instructional Activities	Examples of Resources
. creative thinking exercises . short span activities . variety of exercises emphasizing fluency, flexibility, originality, and elaboration . teacher leads	. New Directions in Creativity Mark I, II, III (Renzulli and Callahan, 1973) . Basic Thinking Skills (Harnadek, 1976) . Project REACH (Wandell and Foss, 1975) . Purdue Creative Thinking Program (Feldhusen, Treffinger, and Bahlke, 1970)

Stage 11 Creative Thinking and Problem Solving Strategies

Instructional Activities	Examples of Resources
. creative problem solving brainstorming . inquiry, synectics, forced relationships . teacher leads but students take more initiative	. Productive Thinking Program (Covington, Crutchfield, Davies, Olton, 1966) . Think-Ins (Kaplan and Madsen, 1974) . Ideabooks (Myers and Torrance, 1965)

State 111 Independent Learning Abilities

Instructional Activities	Examples of Resources
. based on student's own interests . work individually or in small groups . realistic goals with some end product . students take lead, teacher aids or serves as resource person	. Big Book of Independent Study . Interests-A-Lyzer (Renzulli, 1977) . Guide to Creative Action (Parnes, Noller, and Biondi, 1976)

This three-stage model for gifted education proposes a hierarchical progression of enrichment activities developed on a foundation of cognitive and affective objectives. The gifted student working with this model becomes an increasingly self-directed independent learner. The activities in the three-stage model are designed to develop the skill of productive thinking, problem solving, independent research, and project planning. This model is appropriate to the needs of the gifted students and the various organizational patterns of school settings. It can be implemented by a teacher in a single classroom or grade level grouping.

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* Feldhusen, John and Kalloff, Margaret: "A Three-Stage Model for Gifted Education" Gifted/Talented/Creative Children, Sept.,/Oct. Issue No. 4, 1978 Box 66654, Mobile, Ala, 36606.

ENRICHMENT AND ACCELERATION

The enrichment versus acceleration debate should be laid to rest. Both practices are useful depending on the individual and circumstances. Enrichment means providing materials accelerated in content that supplement the basic curriculum units. In-depth studies in subject areas which are not included in the regular grade level curriculum are also part of enrichment. In addition to opportunities for developing special interest, enrichment should provide for guiding the student to explore a wide variety of both intellectual and non-intellectual activities. However, simply giving a bright third grader a fifth grade reader is not enrichment, nor does it constitute a program for the gifted. Providing out-of-school opportunities for advanced work in science, math or other subjects is acceleration.

Although acceleration is not popular with educators, Stanley (1977) urges acceleration for the highly gifted in math and science and has demonstrated great success with it in SYMPY (Study of Math for Precocious Youth Project, Johns Hopkins University) with youth who display some initial precocity as reflected on achievement tasks and performance which places them above the 90th percentile in one or more areas. Such children are likely to have I.Q.s above 140 and the best educational environment for such highly gifted children is a homogeneous classroom where advanced subject matter is given.

The highly gifted may be provided for by grade skipping, compressing two years work into one, advanced placement, special Saturday classes and tutors. There is much evidence to show that acceleration is feasible and productive and no systematic evidence that shows it to be harmful as long as there are no problems of social maturation or emotional instability involved. Students with special academic aptitude in one field only might be served by a combination of acceleration and enrichment. Youngsters with I.Q.s of 110 to 140 with achievement levels at the 60th to 80th percentile, who may have more creative or expressive talents, may have their major needs satisfied in enrichment programs.

Teachers should be given time for curriculum construction at the local level, but they should also seek assistance from qualified consultants, review the literature on the gifted, and make a search for appropriate existent materials. Programs should be based on (1) objectives that are outgrowths of program goals, (2) learning activities based on the objectives, and (3) evaluation based on achievement of the objectives.

The following writings form a valuable frame of reference for curriculum writers; (1) Piaget's for developmental theories (1960), (2) Guilford's Structure of the Intellect (1967), (3) Mary Meeker's interpretation of the structure and suggestions for its application in class (1969), (4) Bloom's and Krathwohl's taxonomies of educational objectives (1962-7), (5) the hierarchical arrangement of skills listed by Ausubel (1968), Phoenix (1964), the work of Torrance (1962), Renzulli (1972), and Williams (1969), for creativity; and Toynbee (1964) and others for the disadvantaged.

POSSIBLE TOPICS FOR CURRICULUM AUGMENTATION

Tannenbaum suggests that curriculum augmentation should grow out of the core curriculum. On this basis a few possible enrichment topics are suggested below:

Language Arts and Communication Skills

- Semantics
- Debating
- Opera
- Speech
- Playwriting
- Typing
- Creative dramatics
- Creative writing
- Folk Tales and songs
- Public speaking
- Future studies
- Science fiction
- Theater
- Games
- Critical thinking
- Word puzzle games
- Publication of writings
- The Hero in literature
- Poetry
- Drama
- Literature
- Biography
- Great Books
- Programs
- Code making
- Cryptology
- Individual or group research
- Humanities
- Philosophy
- Mythology
- Nonverbal communication
- Vocabulary development
- Media-literacy
- Propaganda analysis
- Film or TV production
- Newspaper study
- Broadcasting
- Book illustration
- Magazine or book production
- Communications theory
- Advertising
- Study of the history of the English language, of the book,
- Development of the alphabet
- Science fiction
- News reporting
- Interviewing techniques
- Comparative mythology
- Puzzle making
- Mythology
- The Bible as literature

Social Studies

- Cultural anthropology
- Economics
- Consumerism
- Future studies
- Social service activities
- Sociology
- Design a corporation
- Election analysis
- Cartography
- Social psychology
- Survey research
- Courtroom procedures
- Market research
- Agronomy
- Planning a political goverment
- Archeology
- Political science
- Historiography
- Independent research
- Research in areas of special interest
- Pre-law work
- Conservation
- Games and simulations
- Neighborhood study
- Research in "roots" (genealogy)
- Individual or group research on a topic of interest

Foreign Language

Foreign language in the elementary school (FLES) may be begun in the kindergarten with aural-oral appraoch. However, there must be provision for developmental progression in the language through the grades. Otherwise, the time and effort are wasted. Another approach to foreign language is from a cultural appreciation angle. That is, the child is introduced to words and phrases in various languages while at the same time s/he is given insights into the various cultures in which these languages are spoken.

Children talented in language acquisition should be given opportunities for advanced study as well as for practical use of the language. They should also be alerted to the many possible career opportunities in business and international relations for use of the foreign language.

While it is important that gifted children gain acquintance with and facility in one or more foreign languages, it should be remembered that merely because a child is gifted does not guarantee that he/she is also linguistically gifted. Those who are linguistically gifted should be alerted to the increasing importance of such languages as Chinese, Russian and other more exotic tongues both in business and world relations.

Mathematics

This is an area where acceleration is easy and profitable for the academic achievers. Topics might also be studies are probability, statistics, logic, computer languages, number theory, set theory. Math can and should be related to sciences; one such possibility is probability and genetics.

Science

Psychology
Astronomy
Microbiology
Oceanography
Optical illusions
Meteorology
Investigations of sound
Marine biology
Experimental psychology
Agriculture
Forestry
Demography
Physiology
Genetics
Hygiene
Ecology
Genetics - math
Advanced botany, chemistry, and physics
Hydroponic farming
Wildlife management
Pollution studies
Mineralogy
Zoology
Floriculture
Botany
Horticulture
Electronics
Planetarium design
Pre-medicine
Astrology
Planning an electrical system

Health and Physical Education

Creative movement, dance, mime, health career exploration, pre-medicine, social work.

Other Provisions and Community Resources

The limitation of the talents ot teachers often make special clubs or monitored independent study under other expertise necessary. Qualified mentors or professionals should be implemented. Use of a survey of community resources should be made for this purpose.

Art and Music

Special talent sectioning should be done for those with talents in specific areas but this is, and should only be, part of a total program. Courses in the humanities should integrate the arts with other subject matter. Opportunities for publication or performances are essential for the talented. A few of the myriad of topics related to the arts are:

Dramatic production
Set design
Photography
Costume design
Furniture design
Advertising
Cardboard carpentry
Animated films
Copper enameling
Mural making
Opera or musical comedy production
Instrument making
Painting in various media
Bookbinding
Toy design
Paper making
Tincraft
Sculpture
Color
Paper mache
Beadcraft
Weaving
Vocal music
Choirs
Art history
Calligraphy
Fashion drawing
City planning
Batik
Furniture making
Silk screen
Leathercraft
Mosaics
Glass blowing
Musical composition
Mixed media
Bargello design

CAREER EDUCATION

Since most gifted students have many potentialities, wide and varied interests and can succeed in many areas of endeavor, career choice is difficult. On the other hand, many gifted children underachieve at school because they are bored and frustrated with programs unsuited to their needs and interests. If grades then are used as the sole criterion for the identification of the gifted, these young people will never have a chance to develop their potential in the school. For the intellectually gifted most career choices such as that of medicine, law, engineering or in the sciences will require long professional training. Therefore, acceleration shortens preparation time. Such students could well benefit by advanced placement and early college entrance. Students with talents in the arts may not choose the college route but may instead choose a professional arts school.

It is important in all programs for the gifted to provide career awareness as well as to assist the student to learn about himself and to realistically appraise his/her own potentialities so that he/she can make wise career choices. Moreover, the program should assist students to develop independence in learning so that they can explore the world of work on their own. Work study programs or exploratory vacation experiences can provide direct contact with possible careers. Contact with mentors in various fields of endeavor as well as apprenticeships can assist in career orientation.

GOALS FOR LANGUAGE ARTS AND COMMUNICATION SKILLS

Goals for the gifted to language arts and communication should involve extensions of the common core in:

. Perceiving - developing an awareness of self, understanding of signs and symbols as well as nonverbal communication, media literacy, communications theory, propaganda analysis, skills and understanding of other symbol systems as well as the written and spoken word.

. Listening - skills which include listening for accuracy, for ideas, and with critical taste and judgment in order to prefer the authentic and imaginative over the sterotyped and contrived.

. Communicating - to speak and write well with correct use of language, with expressive skill and fluency and well-developed vocabulary.

. Reading - to read with comprehension, with creativity and for meaning, to value literary traditions and be able to identify different types of literature, to distinguish between fact and opinion, to recognize slanted and biased news, to be able to recognize style, tone and other elements of literature, to be a discriminating consumer of news.

. Writing - to produce signs and symbols with a sense of exploration and discovery, to develop awareness of style and syntax, to enjoy writing poetry and the other literary modes and genres.

. Creative Thinking - to read creatively and to invent and create new means of expression.

The California Course of Study for Gifted Minors recommends the following goals for literature by grade.

Grade	
1 - 3	Provide knowledge of other times and places and the human condition.
4 - 6	To learn about the cultural values held by man in a cross section of countries.
7 - 8	To develop a knowledge of writing techniques and language usage.
10 - 12	To lead the child away from the easy answers of childhood to adult issues through a thematic approach to major-youth adult conflict themes such as heroism, temptation and situational ethics.

To develop independent learning skills for intellectual inquiry, four approaches to language are used: history and chronology, textual analysis (structure style), meaning, and theme.

. Values

There is much material available for values clarification activities. Other means of assisting children to acquire worthy values is through role playing, creative dramatics, and a study of philosophy. The best internalization of values, however, is done through a sensitive study of the great works of man in literature, history, and the other arts. Biography is useful in providing role models. Bibliotherapy is useful as a counseling aid.

GOALS FOR SOCIAL STUDIES

Social studies are a key study for the gifted both for the potentials of its several disciplines and because of the valuable social outcomes that can accrue to society. While our society needs scientists, it equally needs brilliant minds in the science of human relations and the study of man's interrelationship with the environment. It also offers a wide span for the development of thinking skills, logical understandings, and social concerns.

Some important goals for social studies include:

- The development of higher level thought processes, ability at inquiry and discovery.
- The gaining of important concepts and ideas about man, and about the present and all aspects of the student life and times.
- The gaining of methods of acquiring knowledge independently, skills to evaluate it critically, and skills for transmitting the knowledge to others.
- The development of responsibility to society.
- Development of an understanding of man and his societies.
- Opportunities to develop creative problem solving ability.

Among skills to be developed are:

- Ability to see relationships between the past and the present and to predict possible outcomes for the future.
- Deductive and inductive reasoning.
- Ability to distinguish fact from fiction, to detect bias.
- Ability to make analogies from the past to the present.

SOME SUGGESTED STRATEGIES FOR SOCIAL STUDIES

Few children, no matter how gifted, will be able to independently discover the basic generalizations of human behavior without some instruction But the Holiday Curriculum or the Grand Tour with emphasis on physical geography and array of unrelated facts will not accomplish this end. Instead, social studies should be employed to give a better portrait of man and his problems through seeking high level generalizations, to introduce realistic concepts of human behavior as well as to reveal the role of self-interest in man's actions and the uses of power. Students should be given the opportunity and ability to use various sources to collect data, to detect bias, to think critically in coming to conclusions and gain the ability to express those conclustions effectively to others and persuade them to accept their findings and proposals. Students should be taught to see cause and effect and project into the future all possible effects of these causes. The student should engage in individual search in some area of interest.

Four important phases of the education of the gifted child in the social studies center around the techniques or methods by which s/he learns; (1) how to acquire knowledge, (2) how to evaluate its critically, (3) how best to transmit knowledge to others, and (4) how to develop creative ability. Some approaches toward these ends are suggested on the following page.

. Research: one technique for acquisition of knowledge is the Committee for Research. This method can be used from first grade on. The committee approach insures that more knowledge can be acquired than if research is done by an individual and that students will learn how to work with others. The intellectual interaction with gifted peers is essential as are the social skills which may be acquired. Much good reference material must be available and the child must be taught to use multiple resources, various sources, and to compare opinions.

. Listening: Children should be taught to listen to the news, read the newspapers and discuss them in depth, to become involved in analytical thinking, to distinguish fact from opinion, and to evaluate the relative importance of the news.

. Evaluation: Children must be taught to evaluate based on criteria and to use these criteria for evaluation of the performance of self and others.

. Communication: The ability to communicate is the key that unlocks the mind and puts it to the service of society. Both oral and written reports should be encouraged. Participation in discussions can teach the child how to be both a group leader and participant and to develop communication skills.

. Creativity: Social studies offers many opportunities for creativity. Future studies is one area that can challenge creative minds. Children should view the past and the present and attempt to create desirable futures. How can we make our community more beautiful? Or more complex questions regarding world interdependence, conservation, or the problems of ethnic groups may be tackled.

. Social activities are attempts at improvement which can grow out of discussions on such topics. Of primary importance are the mental attitudes that develop during the performance of these activities. Social activities designed merely to keep the gifted child busy while others catch up with him are wrong, and the concept of social interdependence is lost. The gifted child can best serve society by developing his own mental capacity to the fullest and serving society with the products of his mind. The subject matter of social studies is broad enough to challenge gifted minds at any grade level without the vertical acceleration necessary in some other subject. The mental and social development children receive in a well constructed social studies program will to a large extent determine the nature and extent of the contributions these children will make in either the social or physical sciences.

GOALS FOR MATHEMATICS

To facilitate the growth of the gifted in math it is essential to help them to understand that math is a way of thinking, of deductive and inductive reasoning, that it is an area of dynamic change and discovery. Curricula for the gifted in math should:

- Condense the math of the regular elementary programs because gifted students can grasp it more readily.
- Stress the structure of math.
- Present more abstract and complex concepts that those of the core curriculum.

- Stress the understanding of major math concepts and the relationships between concepts.
- Use a discovery or an inductive approach.
- Develop independent creative thinking.
- Involve concept exploration through challenging apparatus and concrete materials.
- Be interrelated to the sciences.

Some possible approaches for the gifted include:

- Elaboration on the number systems as in codes, the Sieve of Erasthones, etc.
- Probability, statistics, set theory.
- Acceleration into algebra, trigonometry, calculus.

The problem in math for the gifted is that few elementary teachers are experts in this area. To overcome this problem math clubs or classes at higher levels in high school or college might be provided.

GOALS FOR SCIENCE

Children of the next generation will either be part of the scientific community or will have to deal intimately with that community. Scientific studies should be interrelated with the humanities to help students feel keenly about the attendant social responsibilities for advances in the sciences.

In order to reform poor science programs many scholars produced new curricula and science materials in the 60's. The rationale for the new curricula involves understanding the structure of the discipline as well as its fundamental principles and stressing these in teaching. Emphasis is on science as inquiry, experimentation, evaluation of evidence and construction of models and theories.

Approaches should involve:

- Exploration-free unguided exploratory experimentation with materials and equipment.
- Elaboration-provide materials and allow the child to further explore his aroused interests to further inquiry and discovery.
- Synthesis-introduce principles-thus moving from concrete perceptions to abstractions. But random exploration is not enough, programs must insure continuous developmental learning. Such programs make intensive demands on the teacher who needs to have continuous training to cope with students' demands, for their interests will be wide ranging.

While these new science curricula improved on old ones, more integration of the science is needed especially around social problems so that students can see the linkage between the various sciences and life concerns. Students should also see how the sciences and humanities interrelate. Possibilities here involve the use of science clubs, acceleration at higher levels and the use of well equipped and staffed "science centers," where students can study part-time, and serve apprenticeships with practicing scientists to learn more and provide for career exploration.

DESIRABLE ATTRIBUTES FOR PROGRAMS FOR THE GIFTED

Process Education

Many educational innovations focus on providing more effective instruction through emphasizing the process of thinking, feeling and learning, not just on the content of learning. These innovations are described under a variety of different names such as process education, humanistic education, open education, and informal education. Process educators are committed to helping students to learn more effectively and how to use their imagination, judgment, problem solving, discrimination and decision making abilities. They are less concerned with content (facts and information) that have been traditionally the classroom teacher's primary concern. While certainly all children must master the basic skills for these are what one needs to get an education, teachers should not allow the "back to basics" cry to deter them from developing these higher abilities, which are also intrinsic to survival in a complex technological society. Process educators realize that it is impossible to teach all the facts students need to know or even to agree on which ones are the most important. They know they must teach the student to learn how to learn, to problem solve and to be able to find new and creative ways to cope with a world characterized by unceasing and escalating change. While such education is important for every child, it is especially so for the gifted.

Humanistic Education

Humanistic educators are concerned with developing whole human beings able to fuction effectively in a participatory democracy. They are concerned not only with the cognitive but with affective education as well. Their orientation is well expressed in the humanistic psychology of Carl Rogers.

Although it is important for every child to have a humanistic education, it is of paramount importance that we make sure that the gifted, from whom will come our leaders of tomorrow, are whole humanistic individuals that possess an enormous amount of knowledge and at the same time are sensitive, caring people, humanitarians that place great stress on concerns for one's neighbors. The definition of gifted and talented can no longer be viable and accurate if their intelligence quotient is the major factor for entering the programs. This type of mind set leads to tunnel vision and narrows the capabilities of programs. To foster humanistic education teachers must be:

- process-oriented rather than subject-oriented
- thinking-oriented rather than memory-oriented
- valuing-oriented rather than one social set-oriented
- challenge-oriented rather than passive- or acceptance-oriented
- caring-, sympathetic-, compassionate-oriented rather than cold- and calculating-oriented
- people-oriented rather than material abundance-oriented

The humanistic approach to learning is a holistic one, an interdisciplinary approach that helps the students to see how various bodies of knowledge interrelate and what this knowledge means to man. This approach not only increases meaning but also makes it more relevant to students, since they can better see how it relates to their own lives. Such an approach involves not only the facts of history and other subject matter but interrelates the arts: music, poetry, literature, the visual arts which are highly affective in content. Through involvement in these arts students not only learn the meaning of other symbols but also learn to communicate more effectively and become sensitized to their environment and to others. Deep concerns are aroused and the student grows into a more well-rounded human being.

Interdisciplinary courses are best taught by teams of teachers with specialties in the various areas, but there are now a vast variety of learning aids in the area of arts and humanities which can help teachers incorporate a humanistic approach into learning. However, no teacher can do a creditable job in humanistic education without some training in the various arts, art appreciation and history, and a wide cultural background.

Telescoping the Basic Curriculum To Provide Extra Time

The gifted child should not be penalized by being expected to do all the regular curriculum work and then all the enrichment or accelerated program work as well. Because he/she learns much faster than others, the regular curriculum should be telescoped so that time is not wasted in unnecessary practice on skills and concepts already mastered. He/she should not have to make up work missed out on when attending enrichment or other gifted classes. School curriculums are very repetitous. If a concept is missed such as "main idea" or "supporting details" in reading, the topic will come up repeatedly in the future.

Commitment of Learning: Not Mere Coverage

Since many teachers are coverage-minded, the bright child is often pressed to learn more and more facts and concepts. So long as the child is interested in doing this such work may be enriching. However, the compulsive coverage of subject matter may become simply verbalism and may ignore the natural limits of learning and discourage the child. Since the bright child will probably go on to college or other higher education, the elementary and secondary schools should share more responsibility in stimulating interest in learning and in building motivation and good study and thinking habits than they do in coverage of subject matter. Thus, student participation in planning, committee activity, and other devices which gives promise of developing greater degrees of involvement or commitment to learning may stimulate abiding interests which will be more beneficial to the student than the present coverage at a low level of student involvement.

Development of Creativity

There is today an increasing emphasis on developing creative behaviors because of the great need to find creative ways to solve the enormous problems facing the country and civilization itself. Simply defined creativity is the effective utilization of knowledge--it is the putting together of known bits of knowledge in new and unique ways. Since creativity depends on knowledge, wide experiencing can enhance the possibility for creative thought and behavior. E. Paul Torrance, of the University of Georgia, and Sid Parnes of the Creative Education Foundation at Buffalo, believe that creativity is not just the result of heredity but can be developed in all individuals. Big business has long used the methods that Parnes advocates for problem solving and the development of new products.

Although teachers show increasing awareness of the need for encouraging creative thinking in children, our present educational system to a large extent still overlooks the intentional enhancement of such behavior. Research shows that teachers spend most of their time telling children what to do or giving them information rather than eliciting creative imagination or thinking. A major goal of education for the gifted should be the development of independence, originality, and desire for creative expression and the ability for creative thinking and problem solving. Although it is foolhardy to believe that exercises to develop creativity can promote the growth of a creative genius, the provision of an atmosphere which welcomes creative thought and expression can uncover and encourage creative potential.

Research suggests that there are certain things the teacher can do to create such an atmosphere, and these include:

- Helping the individual to understand the influence of background on behavior so that he/she can get rid of unnecessary blocks to creative thought and performance.
- Helping the individual to perceive himself or herself as a creative being.
- Providing an atmosphere where creativity is encouraged, thus freeing the individual to take risks in expressing or working on creative ideas.

There are now commercial materials which purport to develop creativity in children as well as tests which purport to discover creativity. As yet, there is little research proving or disproving the validity of these items. The Educational Improvement Center at Sewell, New Jersey, has developed a K-12 series of exercises for the development of creativity in youth and is now in the process of having this project validated.

While no school can afford to overlook these new developments and all should certainly encourage creativity in youth, it is wise to proceed with caution. Untrained teachers who hop on a bandwagon without fully understanding the theory and concepts behind this movement could discredit a most worthy development. As pointed out above, the need for teacher training is paramount in providing quality programs for the gifted and talented.

Time for Independent Learning: Quality Not Quantity

Caution: Because the bright child can and does perform most of the tasks assigned to him, there is a temptation to load him down with teacher- or parent-directed activity. He or she takes more and more subjects and participates in more and more lessons and courses. While a good case can be made for many of these activities, if overdone no "breathing room" is left for the child who is forever meeting the expectations of others. If this is the case he can never become a self-directed learner.

To meet this need for independent learning, the schools should provide programs of independent study from K through 12. If the student is a self-starter, well and good. If not, the teacher must help him to get started, be there for consultation where necessary, and set requirements so that the youngster does not simply coast.

Piling on academic subjects reduces the bright child's opportunities to explore in expressive fields at his own rate. Art, music, industrial arts, home economics are often sacrificed to make way for additional elective work in academic fields characterized by study and recitation rather than by creative expression. Without such opportunities, one whole side of the child's self lies undeveloped. Time for independent study and artistic activity, not additional assignments and a heavier load, is the key to development of self-direction and creative interests.

Program activities need to be continually evaluated. Are they routine or stimulating? The emphasis must be on quality, not merely quantity. High standards must be employed for high ability students.

While intellectual ability is to be challenged and valued, an intellectual snobbery that patronizes or ignores social, artistic, and physical values is not rewarding. However, in a culture which rewards athletic prowess with praise and fortunes, the school has a special responsibility to hold intellectual values high. Incentive for intellectual achievement and rewards for this achievement must be provided.

Higher Level Thinking Skills

A basic purpose in all grades and courses is the development of critical thinking. Reflective, analytical, creative and critical modes of thought are characteristic of the intellectually gifted. While thinking cannot be taught in a vacuum, the ability to use thought processes is a more important outcome than any of the curriculum. Modes of thought are residual after the content of schooling is forgotten. We cannot anticipate all the content the child will need to know in the unforeseeable future or even that which will be most useful, but we do know that all students will need to think effectively. Emphasis should be placed on the development of clear thinking rather than on content for its own sake.

Moral Development and Social Consciousness

Moral development and social consciousness are extremely important for the gifted since it is likely that they will attain leadership roles. Intellect can be used for good or evil, socially acceptable and unacceptable ends. A fundamental goal in the education of the gifted must be the building of awareness of social responsibility in using their unusual abilities. Humanistic and values education should be integrated with the entire K-12 curriculum for all, but especially for the gifted.

Balance and Breadth

Balance and breadth are essential ingredients in a curriculum for the gifted. Opportunities must be provided to explore in a variety of fields; in artistic and manipulative fields as well as academic areas. The bright child like others has great need for expression and emotional release and needs opportunities for such expression as well as for intellectual growth. Exposure to many kinds of experiences assures a balance in the child's emotional, mental and physical, individual and social, critical and creative, work and play. Not every child will excel in every endeavor. The task is to make opportunities for wide experiencing readily available, to open doors, to illuminate a wide variety of possibilities. Flexibility rather than uniformity should characterize the curriculum. A broad spectrum of offerings rather than a narrow curriculum facilitates the flexibility needed to meet the individual's needs and interests. The goals should be a rich environment from which guided choices can be made. No existing prescribed curriculum can guarantee success. Instead of tailoring the student to fit a prescribed curriculums, we should tailor the curriculum to fit the student. Commitment to narrowly designed preordained courses does not provide such flexibility. Teachers and administrators should have the freedom to depart from accepted norms in building curricula for the gifted/talented/creative.

GOOD TEACHERS ARE THE KEY TO GOOD PROGRAMS

The key to good programs is the selection of teachers and administrators adequately trained in the methodology and well versed in the philosophical ideals relevant to the characteristics and needs of the gifted/talented. They are a prerequisite to good programs. Teachers who can act as facilitators should be given high priority for gifted programs. The teacher should be an initiator rather than a dispenser of learning.

Criteria for Teacher Selection

The teacher of the gifted/talented should:

- Be able to facilitate productivity in the child.
- Possess a sense of humor.
- Enjoy the reputation of a highly superior teacher.
- Possess emotional maturity and have a positive self-concept.
- Be flexible and tolerant of diversity.
- Display a positive attitude toward gifted and talented children.
- Demonstrate innovative approaches to teaching.
- Show evidence of superior intellectual ability.
- Be able to develop teaching strategies which engage children in the higher orders of intellectual ability.
- Have superior knowledge and performance in at least one area.
- Have training in the area of education for the gifted and ongoing opportunities for continued professional growth.

The teacher is the key figure in any educational program but is especially important in programs for the gifted because so much more is demanded of him/her. In addition to general expertise and special excellence in one or two areas, teachers of the gifted must be highly productive, creative problem solvers and fill the role of mentors and models of intellect, interest and achievement. They must stimulate not only intellectual interests but social concerns as well. The choice of teachers cannot be left to chance or rotation. The choice cannot be made of the "best" teachers but the teachers "best for the gifted." For the gifted/talented "best" will not necessarily mean those with the highest degrees; it will mean those with the ability to stimulate the gifted to maximum learning. Moreover, it means those who are especially trained to teach the gifted.

Improving Professionalism Among Educators of the Gifted: The Teachers Center Concept

The increased amount of research in the area of the gifted done during recent years should affect program development. Unfortunately, because of the general lack of interest in the gifted in the past decade, many colleges and universities have not offered courses in education of the gifted. Consequently, large numbers of educators are not well informed about this area of special education and need further training to develop and implement worthy programs. Since it is often not possible for school districts to hire new staff experts in this area, both because of a shortage as well as because of fiscal restraints, staff development must take the form of inservice or summer institutes. Since it is difficult and costly for local school districts to provide high level training in this area, there has recently been a move to establish Teachers Centers at various centrally located sites so that teachers in surrounding areas can gain training in newer approaches to gifted education.

The basic functions of a Teachers Center include provision of a facility which teachers may visit for the purposes of:

- Receiving inservice training in various forms, lectures, demonstration, and other means.
- Viewing and using both commercial and teacher-made instructional materials
- Exchanging and sharing ideas and problems with other teachers
- Receiving information about various types of existing programs which they may visit or profit from studying.
- Receiving technical assistance or information about sources of technical assistance.

Although Teachers Centers are useful devices for upgrading the skills of any teacher, they are especially necessary for educators of the gifted because:

- The literature on education of the gifted is not readlly available locally. It must be obtained from a wide variety of little known sources. Much of it is produced by local school districts and not available commercially. Consequently,having it gathered together at one site is of inestimable help to teachers.

- At present there are relatively few experts in the area of gifted education. For each school district to hire such experts and transport them from various parts of the country would be extremely costly even in the somewhat unlikely event that the local school would be cognizant of who these experts were.

- Gifted education is a developing field based on the best in psychological and educational theory. However, much of the literature about newer conceptions in gifted education is highly scientific in style and not readily assimilated by teachers. It must be sought out, studied, and often rewritten in such a way as to help educators see its relevance for classroom practice.

Thus,the time lag between what psychologists know about human learning and what goes on in classrooms can be shortened.

- Valid practice is gifted education represents an approach to education widely variant from that which goes on in most classrooms. Teachers must be assisted to understand newer theory and to develop defensible, differentiated programs which are based on the unique characteristics and needs of the gifted. Achievement of this goal requires a massive retraining effort. Once accomplished, however, the expertise of such teachers can spill over to spark entire schools to new heights of excellence.

- Although much lip service is given to individualization of instruction in schools, little true individualization actually occurs. All teachers need further skill in this area, but such expertise is especially important for those in special education (gifted, handicapped) where individual programs are necessary and are already mandatory in some states because of PL 94-142. The Teachers Center can provide materials and training to assist in further individualization.

Since few schools can provide all of the necessary materials, services and expertise needed for the necessary ongoing staff development, so crucial in a rapidly changing technological society, both for reasons of cost and lack of personnel, the Teachers Center is a viable answer. When properly funded and staffed, the Center can assist large numbers of schools with staff development programs at an affordable cost. It can also stimulate beneficial interchange of ideas and expertise.

Teacher Competencies

The lists of attributes frequently cited for teachers of the gifted are often the same as those for any good teacher. However, the demands on the teacher of the gifted are great. To meet them teachers must be mentally superior, have healthy personalities and a wide cultural background, active intellectual interests, outstanding professional qualifications and special training and interest in the teaching of the gifted. Below are listed some of the competencies the teachers should have:

- A knowledge of the characteristics and needs of the gifted. A philosophy of education which recognizes individual differences and seeks to develop each child to his full potential. The teachers' role must vary according to the attributes of those they teach.

- Awareness of the growing body of knowledge and research related to the education of the gifted.

- A functional knowledge of one or more theoretical models and the ability to use them as a guide in planning activities designed to nurture specific talents.

- A knowledge of specific strategies such as simulation, role playing, synectics, dramatic play, independent study and creative problem solving in order to plan activities which suit the needs of the gifted.

- A knowledge of how to build learning activities around the interests of children so that they can deal with problems relevant to them.

- A knowlege of group dynamics in order to guide the gifted child and also to develop his/her knowledge of psychodynamics.

- A knowledge of various means for providing for active participation of students in real life experiences as often as possible and the ability to stress the necessary skills for such participation.

- The ability to act as a resource for learning and as facilitator of the learning environment rather than a dispenser of information.

. Knowledge of skills and strategies for developing creativity.

. A knowledge of tests for identification of the gifted and the ability to interpret and utilize test data in order to remediate weaknesses and build on strengths of students.

. Skills in both group and individual counseling in order to deal with the unique counseling needs of the gifted.

. A knowledge of how to conduct action research through classroom experiments to further the understanding of the gifted child.

. Knowledge of, and desire to become, a vehicle of educational change through modeling.

. The ability to maintain a classroom climate that encourages initiative, inquisitiveness, originality, questioning attitudes, exploration and invention.

The teacher must:

. Possess an understanding of self.
. Possess an understanding of giftedness.
. Have the ability to provide challenge rather than pressure.
. Be as concerned with the process of learning as with the product.
. Provide feedback rather than judgment.
. Provide alternative learning strategies.
. Provide a classroom climate which promotes self-esteem and offers safety for cognitive risk-taking.

Different Roles for Teacher of the Gifted

The role of the teacher in the product-oriented concept of teaching involves sequential presentation of material and qualitative measurement of how much was learned. The teacher ends teaching at the exploratory stage. Since the average student needs this structure to retain vast amounts of information, he/she learns best under the leadership of such a teacher.

The teacher of the gifted must be process-oriented. That is, the material is presented at the exploratory level to facilitate student involvement, inquiry and discovery and to individualize learning so that the direction which the learning process takes is then determined by the student, not the teacher.

Teaching gifted children effectively requires a different perspective and role as well as different teaching techniques and evaluative emphasis. The differences in emphasis in these two methods are demonstrated as follows:

Product-oriented teaching for the average	Process-oriented teaching for the gifted
. Emphasis on end result-product, Leader-participant teacher,	. Emphasis on learning pattern (process),
. Predetermined learning direction,	. Learning direction is determined by each student for himself oe herself,
. Content bounds evolve from teacher's resources,	. Content bounds evolve from students resources,
. Teacher is evaluated, and evaluates students, on the basis of quantitative measurement of the end result (product).	. Teacher is evaluated, and evaluates students on their involvement in the learning process.

FOCUS ON THE GIFTED IN VERBAL FORM

Meaningful Learning for the Gifted

1. Children have ready access to library and other resource materials.

2. Students are involved in independent study activities. The teacher does not dominate the classroom and does not run the class as a "tight ship" but permits the student to have freedom in selecting and pursuing problems in creating.

3. Major emphasis is given to ideas of merit and the enhancement of these ideas.

4. The teacher's questions are open-ended, with an emphasis on generalization, analysis, and synthesis.

5. The interests and abilities of the students are utilized in planning and implementation of curriculum materials.

6. Discussion, utilizing debate and controversial issues, is freely used in the classroom.

7. Appropriately advanced content is available to the students so that there can be exploration in depth.

Less Meaningful Learning for the Gifted

1. The teacher and classroom materials are the main sources of information. Children do not have the freedom to utilize library resource people.

2. Class is run as a "tight ship." The topics and activities are prescribed for the students and there is very little deviation from the routine.

3. The major emphasis in product on is in correct usage, next papers, proper spacing and punctuation, etc., rather than on concepts and ideas of merit.

4. The teacher's questions are primarily closed-type questions with an emphasis on specific facts and rote memory.

5. The course of study is followed very closely, with little attention being paid to the interests of the children.

6. The lessons are carefully structured and there is little room for debate and controversy.

7. The content is based on specific facts and there are very few opportunities for exploration in depth or going beyond the grade level material.

(SAMPLE RATING SCALE OF SIGNIFICANT BEHAVIORS IN TEACHERS*)

To the Rater: A minimum of 40 minutes should be used for each observation. Use every opportunity to examine folios of materials, files of children's products, and other evidence, as well as teacher behavior, to confirm impressions.

	Seldom 1	Occasionally 2	Frequently 3
Teaching Process			
1. Utilizes specialized pupil interests constructively.			
a. Students work in areas of interest.			
b. Teacher capitalizes on student interest in classroom.			
2. Utilizes special talents and abilities of the students.			
a. Students are involved in activities which display or include their special abilities and talents.			
b. Individualized materials are available for development of special talents and abilities.			
3. Encourages self-selection of materials.			
a. Students have freedom to select materials at higher conceptual levels of difficulty.			
b. Teacher encourages pupils to make own selections and decisions.			
4. Makes classwork interesting through use of different sense media.			
a. Teacher encourages effective pupil displays, not teacher-made displays.			
b. Teacher uses maps, charts, TV, radio and/or films to augment or advance the quality of instruction.			
5. Maintains or uses classroom resource center containing materials at appropriate advanced levels.			
a. Learning resources are openly available to students.			
b. Teacher serves as a resource to pupils.			

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* From California State College, Dominguez, CA.

	1 Seldom	2 Occasionally	3 Frequently
6. Clarifies classroom goals and purposes using broad concepts rather than detail.			
a. Relates discussion to course objectives.			
b. Student's performance indicates understanding of course objectives.			
7. Uses varied teaching strategies effectively.			
a. Teacher is sensitive to students' responses, both verbal and non-verbal.			
1. Teacher responds to visible cues in physical behavior of students.			
2. Teacher uses student verbal reactions to extend student insights and understandings.			
8. Conducts group discussions skillfully.			
a. Teacher withholds own ideas and conclusions.			
b. Teacher encourages participation of students in discussions.			
9. Selects questions that stimulate higher-level thinking.			
a. Questions encourage students to draw analogies and to indicate relationships.			
b. Students are able to ask analytic questions.			
c. Students generalize from concrete to abstract at advanced levels.			
10. Utilizes synthesis and analysis in appropriate areas.			
a. Teacher utilizes effectively inductive and deductive reasoning and is able to apply techniques in classroom.			
b. Teacher assists and/or encourages students to relate theory to practice.			
11. Draws examples and explanations from various sources and related fields.			
a. Interrelationships are emphasized by teacher and students.			
12. Presents activities that challenge and stimulate the students.			
a. Students are eager to work on activities.			
b. Teacher varies the kind of assignment to the learning abilities and interests of the students.			
c. Teacher emphasis is on broad ideas and not drill and rote memory activities.			

	1 Seldom	2 Occasionally	3 Frequently
13. Utilizes evaluation in various forms.			
a. Teacher helps students in self-evaluation and self-improvement.	___	___	___
14. Encourages independent thinking, including difference of opinions.			
a. Students are encouraged to examine thoroughly and accurately controversial issues.			
1. Students compare and contrast different issues, using objective evidence.	___	___	___
15. Gives appropriate encouragement ot pupils.			
a. Teacher gives praise when deserved.	___	___	___
b. Teacher makes students feel worthy.	___	___	___
c. Teacher provides for recognition of outstanding creative and/or scholarly performance	___	___	___
16. Understands and encourages student ideas.			
a. Teacher encourages students to try new approaches.	___	___	___
b. Teacher is tolerant of students' attempts to find solutions of problems.	___	___	___
c. Teacher encourages "guesses" by students and facilitates evaluation of guesses by students.	___	___	___
d. Teacher helps students to realize that research involves trial and error.			
1. Students are encouraged to apply principles of scientific procedures.	___	___	___
Teacher Background			
17. Is unthreatened by own mistakes.			
a. Teacher is undisturbed and unembarrassed by own mistakes or criticism of students.	___	___	___
18. Teacher displays enthusiasm and employs humor constructively.			
a. Teacher is energetic and animated.	___	___	___
Summary Item:			
19. Demonstrates understanding of the educational implications of individualizing instruction.			
a. Teacher uses implications of individual differences in the classroom operation, selection of materials, schedules, and questions.	___	___	___

MOTIVATION AND GUIDANCE ARE NECESSARY

The most important job of instructional guidance personnel is to help teachers plan, develop, and maintain high levels of aspiration in gifted pupils. Underachievement in this group is often the result of lack of motivation.

In some communities the culture may provide the necessary motivation for learning, but in many others (particularly those of the inner city), the culture may be the chief bar to achievement of promise. Early recognition of low motivation and correction of resulting underachievement are vital in order to reach pupils before serious attitudinal damage is done.

Provision for development of worthy self-concept must be built into programs particularly for those who are the underachieving or handicapped gifted. Not all gifted pupils are gifted in every area. Some may have serious deficiencies in the basic skills. Provision must be made for remedying these deficiencies. Gifted/talented children should not be penalized and kept out of all activities for the gifted because they are lacking in some area of basic skills. Often the motivation of a program more suited to their needs and interests will spur them to greater achievement in the skills area.

THE LEARNING ENVIRONMENT

Although highly qualified teachers and relevant curriculum experiences are important factors in programming for the gifted, a total approach to talent-development should include a more open system, especially for low socioeconomic and minority group members. To provide this more open climate:

- The classroom must be broken down into small learning modules where individual pupils and small groups become the main focus of instructional efforts. Contracts, LAPS, kits and other media/materials to facilitate independent learning should be used.

- The learning environment must be responsive. Since the gifted, more than average children, need much individualization and many opportunities for independent study, the teacher must provide many Interest Centers Learning Stations, Skill Centers, and other devices and strategies.

- Although the school remains home base, early in the elementary years gifted students should be provided with extended periods of learning time outside the school in museums, libraries, experimental laboratories or in other places where knowledge is being discovered or on the job training is done.

ADMINISTRATIVE ARRANGEMENTS

No single administrative plan is totally appropriate for the gifted. Certain arrangements or acceleration may be used administratively to provide settings in which the gifted can perform more adequately than in the usual setting. The task is accommodation to the needs of the gifted. Individual efforts to provide enrichment through additional content at an originally inappropriate grade level serve only to compound the frustrations of the gifted. Opportunities and time to pursue individual interests, access to consultation in and outside the classroom with teachers, mentors or others, and opportunities to by-pass curriculum already absorbed in the past are necessary. These types of arrangements must go on in all types of groupings, whether in the regular classroom or in highly specialized interest areas. Opportunities for the gifted to employ their academic and creative abilities should be provided. This requires constant examination of the true relevance of the content to which the child is exposed. It also implies a knowledge of alternatives to standard prescribed materials and methods.

The Role of the Administrator in Providing Programs for the Gifted and Talented

The administrator must be aware of these new developmentsin this field of special education and must be an active participant in helping to plan programs for the gifted/talented, must take administrative provisions so that programs can function, and above all must provide a climate conducive to the health and growth of the program. To do this, he or she must foster an understanding on the part of regular staff and the community of the goals and operation of the program. He or she must also provide time for teachers to plan the program and the curriculum as well as for professional growth through attendance at conferences, workshops, and site visitations. Teachers need this time for planning and for personal growth and for exchanging ideas with other teachers. While the administrator plays an important role in making the organizational and administrative adjustments, his/her greatest contribution comes in the leadership he/she gives the professional staff in cooperative planning and in the provisions for opportunities for the teachers to increase their professionalism.

OVERCOMING OBSTACLES AND AVOIDING PITFALLS IN ADMINISTERING PROGRAMS FOR THE GIFTED

In considering the initiation of a program for the gifted, a carefully planned master strategy including a variety of stages will assist the administrator to avoid many problems which can arise in connection with such a venture.

Stage I: Awareness

All populations, staff, parents, community and students should be exposed to a sound rationale to substantiate the need for the development of a differentiated program for the gifted/talented/creative/. Through a carefully planned communications and public relations program a heightened awareness will result and it will become possible to identify an advocacy group. This group will not only become invaluable in providing advice and support for the program but is an absolutely essential power base from which to operate.

Stage II: Planning

The advocacy group, composed of staff, parents, the community and students work together to plan the specific program to be initiated. If care is exercised to give equal status to the various members of the group, each population will develop a responsibility for the plan and personally identify with it. The planning stage should include all aspects of the program and will involve:

- Criteria for identification of the students
- Criteria for identification of the staff to be involved
- Staff development plans
- An organizational plan to be selected
- The curriculum to be developed and/or implemented
- Materials needed for the curriculum
- The budget allocated for the program
- Articulation processes for the staff not included in the program as well as for those involved
- Monitoring and reporting procedures
- Creation of a widely representative advisory committee
- Specification of realistic and specific program objectives to be achieved and means of evaluation of the achievement of the objectives
- A time line for for action

Students, all staff, and parents must be introduced to the program to promote awareness and understanding of program goals. Formal or informal meetings should be held to acquaint people with the purposes and mechanics of the program. Key staff persons, and especially the administrator, should thoroughly comprehend the program so that they can answer questions about it and be supportive of it.

Since a differentiated program for the gifted differs not only in its goals but in its objectives and strategies as well, it is important to develop an outline of the program clarifying those techniques which set it apart from programs used for heterogenous groups. Such an outline will enable the professional staff to differentiate and evaluate the special course of study and to communicate in specifics about the general program to the public.

Programming should not result in conflicts in which the gifted student is torn between going to the enrichment class and some other desired activity. The selected students should not be so overloaded with work in both the regular and gifted class that they desire to withdraw from the latter. Programming should be arranged so there is no conflict over use of materials, space and student time.

Stage III: Implementation

The implementation process should include all aspects of the planning stage, as well as a periodic monitoring and reporting stage process that will identify any problems quickly. The procedures established for review and revision will facilitate the elimination of trouble spots. Specific criteria for the identification of students and staff will reduce problems during this stage. Objective data in matrix form should be filed for use in case of appeal to placement. A reporting process should be used to maximally articulate all populations on an ongoing basis. Periodic communications about the progress of the program builds favorable publicity for it.

Stage IV: Evaluation

All aspects of the evaluation process should be fulfilled. A total account of the program results in comparison with the specific objectives should be prepared in writing and reported widely. The evaluation plan is most effective if it includes all the populations involved in the program, staff, students and parents. Establishing realistic goals that are far more likely to be achieved is better than setting goals that may be more desirable but more difficult to reach. Reserve more difficult goals for the second or third year of the program when all populations involved have had more experience.

Recycle

Good public relations work must be continuously maintained to provide good program support. Efforts to communicate about and publicize the program increase the potential for it to become an integral part of the institution. The availability of some sort of "handout" and visual presentation which can be transported and shared at various meetings is helpful. Students should also be used as spokesmen for their program. Brochures, bulletins, news releases and speakers will assist the community to understand and support the program. Continuously involve new individuals in the advocacy group to fill places lost for various reasons. Refresh and spark the group and enlarge the power base. Constantly adding new and interested parents and staff to the advocacy group will strengthen the program.

The various aspects completed during Stage II: Planning should be reviewed and modified based upon the results of the program and the events of the year. A modified and refined Stage III: Implementation strategy will ensure a better program for second year. The continuous recycling procedure permits the flexibility necessary for the program to growm and improve.

ADMINISTRATIVE PROBLEMS AND SOME SUGGESTED SOLUTIONS

Problems arise in connection with gifted programs in relation to the following situations:

1. If a program is to be tried out only in a few schools or classes how should the schools or classes be selected?

It is best to place programs in schools where:

(a) The principal is a good administrator and is interested in having the program and

(b) Where there is a well qualified teacher interested in, and with training in, the area of gifted education.

2. If the program does not serve every class and grade, problems may arise from teachers or parents of unserved populations.

Public relations work must be done to explain that this is a pilot program which will be expanded to serve others in the future, if funds permit and the program accomplishments justify expansion. Clear description of the program development plans in advance to the community will reduce the number of such complaints.

3. The process for selection of students or teachers for gifted classes may be questioned.

Some heads of programs recommend that a third party agent such as colleges or Mental Health Services do the pupil and staff selection. The Hunter Elementary School in New York City uses a separate testing service. Several New York City school districts have used the New York University Testing Service. This practice prevents the frustration a parent may feel when his child is not accepted from being aimed at the district. It also prevents pressure from political figures from being transmitted to the project staff. Thus the integrity of the selection process is maintained.

In the event that the selection is made by the local district it is wise to use a matrix which includes both subjective and objective data from multiple sources. When multiple criteria are used and a variety of persons are included in the selection process it is difficult for the disappointed parent to place blame on a single individual. Maintainence of the matrix data, case study, or other selection information is a necessary protection for the district in cases of appeal to placement.

4. Problems may arise in connection with the selection of teachers for gifted programs.

Such problems may be solved by using extreme care in selecting teachers. Listings of desirable teacher characteristics and the necessary competencies are available for use in the selection of teachers of the gifted. In general, the teacher should:

- Have a broad cultural background and suitable personality for working with the gifted.
- Be interested in and have training in the teaching of the gifted.
- Be process rather than content oriented and understand the need for the development of creative problem solving ability in youth.
- Have classroom management and other skills for individualization of instruction.
- Be able to make wide and effective use of community resources.
- Be able to help students become independent learners as well as whole human beings.

Teachers should not be selected:

- On the basis of seniority.
- Simply because they express a desire to teach the gifted.
- If they are not willing to spend extra time and effort on the job and in continuing to grow professionally.
- If they are dependent on traditional strategies, text books, printed curricula, class-wide instruction and the content approach.
- If they cannot bear being observed often by other professionals.

The use of outside consultants may serve to make the selection process as objective as possible and reduce the hostility of teachers not chosen.

5. Problems may arise in connection with materials, supplies and funds.

Gifted children use up materials and absorb experiences at a rate far greater than an equal number of "average" children. They need a wide variety of books, materials, trips, as well as more space to work in, since they are often involved in constructing individual projects.

Usually purchases of full class quantities of textbooks for the gifted are wasteful, a few copies each of a variety of texts at different levels is better, along with a wide variety of trade and other books, Science and art equipment and supplies are needed as well as are special teachers and resource persons. The community should be surveyed to make the widest and best possible use of all available learning resources

6. Problems may arise if clear communications about the program are insufficient or lacking.

The communication needs of the parents of the gifted are intense and a definite, clear communications system should be arranged to meet those needs. In addition, programs can deteriorate if teachers or principals are not given clear statements regarding their responsibilities and the limits of these responsibilities. Teachers also need continuing guidance and a chance to air their problems as well as continuous, ongoing inservice training. Public meetings must be arranged and public relations materials must be created. Clearly a program coordinator is needed to provide for these and other programs requirements. A good coordinator (or supervisor) should:

- Have full time responsibility for the gifted program
- Give or arrange for inservice training or teachers
- Arrange for school and district meetings on the gifted.
- Disseminate information to the teachers and principals; set down guidelines.

- Prepare program documentation for use by the community and visitors. This documentation would provide the history of the program, funding, goals, the selection process for children and a staff and evaluation procedures. This document would help others to replicate the program and may be used in communications with the school board and community in funding requests.

- Prepare materials for teachers and parents on gifted education.

- Receive all calls and requests for information in relation to the program, host visitors, and limit visitation to prevent too much disruption of programs.

- Maintain regular meetings with staff to deal with problems and provide a quick feedback loop to take advantage of what is learned about the program on an ongoing basis.

- Inform the superintendent quickly about any incipient program problem so that attempts to quickly solve it can be made rather than have it brought to the attention of parents and school board.

- Decide with parents and teachers whether the district should maintain uniformity in each of its gifted programs or will it allow each school and/or teachers to evolve their own approach.

- Keep abreast of all current literature on the gifted for the obvious reason of raising staff effectiveness but also to be alert to parents' questions and comments. Many parents belong to organizations and read the literature on the gifted. They try to use the information to get what they think is good for their children. The coordinator and the staff are best prepared by having an agreed upon philosophy and by being familiar with the research in the field. The coordinator must be prepared to answer questions of parents who may ask if the program is acceleration or enrichment, naively assuming that is must be one or the other.

7. Problems may arise from attempting to do too much at first.

Trying to do everything at once results only in confusion. Program goals and objectives should be carefully worked out and clearly stated. A flow chart with specific dates and times for accomplishment of the objectives is suggested. Means for evaluating the objectives should be considered at the beginning of the program.

8. Morale problem may arise

- Fatique and the realization that the teacher cannot know as much as the combined knowledge of the children cause difficulties.

- Teachers may feel threatened because they feel that they are always on display, must always provide peak performances, and that student grades and work must always be outstanding.

- Other teachers may attempt to sabotage the program in various subtle ways such as providing for an exciting activity just when certain children must leave the room to go to the enrichment class.

- Most of these problems can be avoided or alleviated by providing warm support for the gifted teacher, educating parents and other teachers about the program and arranging for as much interface with regular programs as possible. It is the superintendent's job to provide a climate in which the program can flourish.

EVALUATION OF PROGRAMS FOR THE GIFTED/TALENTED: SOME SUGGESTIONS AND CAUTIONS

It must be understood from the outset by all populations that objective evaluation of programs for the gifted and talented is an extremely difficult task for the following reasons:

- The long-range goals of such programs - such as the objective of having the student become an independent lifelong learner - are difficult to measure in a short time span.
- Since gifted pupils are already operating at a high level it may be difficult to see large gains on tests.
- There are few if any valid instruments for accurately measuring many of the qualities that programs for the gifted/talented hope to nurture.

However, there are three basic approaches to evaluation designs which may be used: (1) product measurement, (2) process measurement, and (3) presage design. Each has its own strengths and weaknesses; but when applied to assessment programs for the gifted and talented there are special cautions and limitations which should be noted:

1. Product evaluation: This type of assessment attempts to find "hard data," but it is difficult to be certain if the measured growth was really caused by the special program unless a control group has also been measured. Moreover, the growth could be caused by extraneous factors. For example, the growth shown may simply be the result of the fact that the children are gifted. Giving a pre- and post-test to a single group can therefore yield results that are nearly impossible to interpret correctly.

   Another problem relates to the instruments available. Tests which measure general achievement can hardly be expected to measure the many specific and unique learning experiences that characterize programs for the gifted/talented. Nor do they do a very accurate job of assessing higher level cognitive abilities, creativity, problem solving, judgmental abilities or upper-range affective and non-cognitive concerns such as interests and values. Moreover, most norms on tests are based on average populations and thus may be inappropriate for gifted children.

   It should also be remembered that many gifted students entering programs are already operating on high levels and they may be close to the test ceiling at the beginning of the year. In addition, regression effects tend to occur. Students scoring very high tend to regress toward the mean. This purely statistical phenomenon makes it rather difficult to demonstrate large gains in programs for the gifted.

2. Process Evaluation: In programs for the gifted it is appropriate to measure ongoing student-teacher behavior and the level of thought processes and instructional questions. The major pitfall in this approach lies in the low reliability of observations. Generally, the lesson observed may be a showcase lesson and not really typical of what happens every day. A possible way around these problems may be to use students themselves as observers in the Class Activities Questionnaire. Other instruments used for measuring process include the Flander's Interaction Matrix and the Cerli Matrix.

3. The Presage Design attempts to estimate the quality of a program by assessing key variables much as personnel managers attempt to evaluate job applicants on the basis of factors that are assumed to have a positive relationship with success on the job. The DESDEG (Diagnostic and Evaluative Scales for Differential Education for the Gifted) model is one method of determining the quality of characteristics essential for the success of the programs for the gifted.

Perhaps the best compendium of information on evaluation of programs for the gifted is the Guidebook for Evaluating Programs for the Gifted and Talented, by Dr. Joseph Renzulli, available from the Ventura County School, Ventura, California.

A comprehensive treatment of evaluation processes for gifted programs which includes measurement techniques and suggestions for judging the quality of the environment, the teaching, student reactions, and processes will be provided under separate cover.

RESEARCH DATA ON THE GIFTED

Teachers must know what research reveals about education of the gifted in order to create defensible programs. Research in this area has been limited and insufficient but the data are growing. James Callager's Summary of Research on Gifted Child Education reveals the following research results.

- The IQ score is the result of learned experience and born characteristics and it measures the most important aspects of cognitive abilities.
- Students who ~~do~~ well on IQ tests can be expected to do well in school.
- Group IQ tests are useful as a gross screening device but they should not be used without other selection criteria.
- Transitory influences affect IQ tests more than creativity tests.
- Teachers tend not to identify the gifted with great accuracy.
- Most of the studies on creativity in adults have concentrated on scales to distinguish the creative from non-creative.

- The Getzels and Jackson study reveals that highly creative children are more interested in their own aspirations than social success. They are less likely to want to please the teacher and conform than high IQ students.

- The two most common indicators of achievement are grades and test scores.

- The program for the gifted that causes the least change in existing programs is ability grouping.

- The evaluation of the California State Plan (Martinson 1961), enriched program students showed slight gains in achievement over comparable students.

- Passow, Goldberg and Link (1951) generalized that whenever ability grouping is accompanied by differentiated curriculum favorable results can be obtained.

- The major weaknesses of ability grouping research have been sampling procedure, measuring instruments, and treatment variable.

- In Schwartz' (1942) Study of 20 pupils enrolled in a special class program and 200 in a regular program in New York Schools the special class group was significantly superior at every grade level and in all subjects. Other studies reveal similar results. However, the Goldberg study reveals that ability grouping is by no means a sufficient condition for insuring academic achievement at any level.

- Large city specialized schools offer advantages not contained in the comprehensive high school programs.

- The need to group students by ability becomes manifest when the goal is to understand important abstract ideas.

- Underachieving gifted students tend to have low self-concepts.

- Counseling is required to increase student motivation. However, the limited experience of counselors with the gifted is a drawback.

- Creative students tend to estrange teachers mainly because classroom climates are not conducive to creativity.

- Although, the creative and the high IQ students are equally superior in school achievement, the high IQ tries harder to succeed in school, whereas the self-ideal of the creative child is nonconsonant with the teacher-approval model.

- Even among youth of high abilities, personality factors arising from unfortunate circumstances may lead to under achievement and emotional instability. (Remediation should be undertaken as an initial phase of differentiated education to subsequently allow fuller operation of potential.) Such children should not be excluded from opportunities to develop potential.

- School subjects showing the greatest differences in favor of the gifted were debating or speaking, U.S. history, composition, literature, ancient history.

- Mednick (1972) found creative thinking to be strikingly independent of the conventional realm of intelligence and stated that it has a unitary and pervasive dimension in its own right. (Creative people have an asocial attitude and an antipathy toward anything encroaching on individuality.) Roots of creativity lie not in convergent or divergent thinking but in the personality and motivational aspects of character. Creative children may not be well rounded and prefer to learn on their own, attempt difficult tasks, have off-beat ideas and are characterized by humor and playfulness.

BIBLIOGRAPHY

A large and growing amount of literature and teaching/learning materials are now available on the education of the gifted/talented. Rather than confuse the reader with extensive listings, this paper confines the selection to a few useful publications related to the topics discussed.

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Creative Learning and Teaching, E.P. Torrance and R.E. Myers, Dodd and Co. New York, 1970.

All of the publications listed immediately below have been developed by the National Leadership Training Institute on the Gifted/Talented. They are very useful for program developers as well as for parents. All are available from:

James F. Cowen Education Department, Superintendent
Ventura County Superintendent of Schools
County Office Building, Ventura, California 93001

In addition to being useful in themselves, most of them contain excellent bibliographies for use in gifted and talented education.

The Identification of the Gifted and Talented, Ruth A. Martinson $6.50

A Guidebook for Evaluating Programs for the Gifted and Talented, Joseph S. Renzulli, $5.50

Providing Programs for the Gifted and Talented - A Handbook (Including Worksheets and Models), Sandra Kaplan $6.45

Self-Directed Study Guide on the Education of the Gifted and Talented, Donald J. Treffinger and Clifford D. Curl $6.00